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Agricultural Land Taxation In Montana

A Report to the 49th Legislature
Joint Interim Subcommittee No. 1

December 1984

Montana Legislative Council

Published by
MONTANA LEGISLATIVE COUNCIL
Room 138
State Capitol
Helena, Montana 59620
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JOINT INTERIM SUBCOMMITTEE NUMBER ONE

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TABLE OF CONTENTS

RECOMMENDATION

At the January 12, 1984 meeting of the Interim Subcommittee on Agricultural Land Taxation voted unanimously in support of the following recommendation:

> That the values currently applied to agricultural lands be adopted as the values to be used for the appraisal cycle beginning January 1, 1986, except that the values applied to irrigated lands be adjusted so that such land's values are not below the value such land would have if it were not irrigated.

In response to the recommendation, the Revenue Oversight Committee on January 13, 1984, requested that legislation be drafted to effect the Subcommittee's recommendation. Such legislation was drafted and discussed by the Revenue Oversight Committee, and received recommendation from that Committee to the 49th Legislature. A copy of the draft legislation appears as LC 0002 and is included as Appendix I.

HOUSE JOINT RESOLUTION NO. 35

A JOINT RESOLUTION OF THE SENATE AND THE HOUSE OF REPRESENTATIVES OF THE STATE OF MONTANA REQUESTING AN INTERIM STUDY OF THE CLASSIFICATION, EVALUATION, AND ASSESSMENT OF AGRICULTURAL LAND FOR TAX PURPOSES, THE LAWS AND EXISTING AND PROPOSED ADMINISTRATIVE RULES RELATING THERETO, AND THE EXISTING AND PROPOSED TAX COMPUTATION METHODS; REQUIRING A WRITTEN REPORT OF THE STUDY TO THE 49TH LEGISLATURE.

WHEREAS, the Montana Constitution requires equality throughout the state in the assessed valuation of property for tax purposes; and

WHEREAS, the Montana Code Annotated provides that agricultural land is taxed at 30% of its productive capacity, that agricultural lands are to be uniformly classified to secure an equitable and uniform basis of assessment of such lands and must be classified and appraised as agricultural lands without regard to the highest and best use of neighboring lands, and that the Legislature intends agricultural lands to be classified and assessed at a value that is exclusive of values attributed to speculative purposes; and

WHEREAS, the Department of Revenue has drafted and proposes to adopt a new set of rules for the classification, valuation, and assessment of agricultural lands for tax purposes, which rules are substantially different than the current rules, particularly with regard to irrigated tillable land; and

WHEREAS, the Department's proposed new rules are such a departure from the current rules that their application would result in a considerable disruption of the tax status and financial situation of many of the farmers and ranchers of this state; and

WHEREAS, agriculture is Montana's major industry, and its products, particularly grains, are sold throughout the world and have an effect on the national economy and balance of payments as well as the economy of Montana; and

WHEREAS, the Department's proposed new rules have raised concern among many members of the agricultural community; and

WHEREAS, the House Committee on Agriculture, Livestock and Irrigation has reviewed the statutes and current and proposed rules relating to the classification and assessment of agricultural lands for tax purposes and believes it to be essential that they be the subject of an interim study.

NOW, THEREFORE, BE IT RESOLVED BY THE SENATE AND THE HOUSE OF REPRESENTATIVES OF THE STATE OF MONTANA:

That an appropriate interim committee be chosen and assigned to study:

(1) the provisions of the Montana Code Annotated relating to the classification, valuation, and assessment of agricultural lands for tax purposes;

(2) the Department of Revenue's current and proposed rules for the classification, valuation, and assessment of agricultural lands for tax purposes;

(3) the method and means by which the Department arrived at its proposed rules and alternative methods and means that could have been used;

(4) the reaction of the agricultural industry to the proposed rules and the industry's views regarding the proposed rules and changes in them;

(5) possible changes in the proposed rules that would result in increased compliance of the rules with constitutional and statutory mandates and the financial situation of Montana farmers and ranchers;

(6) formulas and factors that may be used in the classification, valuation, and assessment of agricultural lands for tax purposes; the effect on taxes and other results of the use of the various formulas and factors; and which formulas and factors are the most appropriate;

(7) the opinions of farmers and ranchers, agricultural economists, the Departments of Revenue, Agriculture, and Livestock, and other experts relating to the classification, valuation, and assessment of agricultural lands for tax purposes;

(8) whether agricultural lands should be classified, valued, and assessed solely in accord with statutes or in accord with a combination of statutes and administrative rules and which person, persons, or entity should carry out the classification, valuation, and assessment; and

(9) any other appropriate matters relating to the resolution of problems detected in studying and determining the matters set forth in subsections (1) through (8).

BE IT FURTHER RESOLVED, that the interim committee provide an outline and time frame for its study, schedule meetings of the committee, and provide the 49th Legislature with a written report of its study, findings, and conclusions and with any drafts of legislation and rules that may be necessary to implement the committee's findings.

FINAL REPORT AND RECOMMENDATIONS OF THE JOINT INTERIM SUBCOMMITTEE ON AGRICULTURAL LAND TAXATION

PART 1

INTRODUCTION

This final report is a brief, general discussion of how agricultural land taxation has developed over Montana's 95 year history, how the tax for agricultural land is derived, what factors affect the tax, and the activities of a legislative subcommittee appointed to examine these agricultural land taxation issues. Although the report at times discusses property taxation in general terms, the principal concern is the taxation of agricultural lands.

The report is written as a summary of the activities of the Joint Interim Subcommittee on Agricultural Land Taxation. Two staff reports prepared for the Subcommittee are included as background material.

BACKGROUND, CONCLUSIONS, AND RECOMMENDATION

1983 Agricultural Land Taxation Legislation

The policy study conducted by the Joint Interim Subcommittee on Agricultural Land Taxation resulted from the adoption of House Joint Resolution 35 by the 48th Legislature. This Resolution called for an appropriate interim committee to study the legal, administrative, and policy issues associated with agricultural land taxation.

While the study was authorized by the adoption of HJR 35, the basis for the Resolution itself can be traced to the early efforts of the Department of Revenue to revalue agricultural lands, a task required by Montana law.

The initial revaluation efforts of the Department culminated in December of 1982 in a proposal to amend the sections of the Administrative Rules of Montana related to the valuation of agricultural lands. The proposal, had it been adopted, would have increased agricultural land values by a minimum of 100%. While the increases may not seem unreasonable considering the fact that agricultural land values had not been updated since 1963, they certainly did not receive much support.

The proposal was given two public hearings in Helena during January of 1983. Those two hearings saw more than 500 agriculturalists from across Montana travel to Helena in protest of the revised agricultural land valuations proposed by the Department. Recognizing that the issue was more than an administrative matter

-- in fact one with considerable policy implications -- the Legislature, in addition to House Joint Resolution 35, passed two associated bills as well.*

The first of these bills to be approved, House Bill 851, (Chapter 510, Laws of Montana, 1983), prohibited the Department of Revenue from adopting any substantial changes to the administrative rules relative to agricultural land valuations prior to 1986. The purpose and effect of the temporary moratorium was to give the 49th Legislature an opportunity to review (and act on if necessary) any rules proposed during the 1983 - 1985 interim.

The second bill, House Bill 637, (Chapter 644, Laws of Montana, 1983), expanded the legislative intent section of Montana's property tax laws relative to agricultural land. The revision did two things. First, it required that agricultural land be classified according to its use and valued according to its ability to produce.

Second, any development of the land, e.g. land shaping or improved water distribution, could not be considered when determining the value based on productive capacity. While neither of the revisions effected any real change in the manner of valuing agricultural land, the changes did codify a practice previously legitimized only administratively.

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* The chief sponsor of House Joint Resolution 35 and House Bill 851 was Representative Glenn Jacobsen. Representative Rex Manuel was the chief sponsor of House Bill 637.

The Legislative Subcommittee

Against this background and in meeting the requirements of the Resolution, the Legislative Council in June of 1983 appointed eight legislators to serve as the Joint Interim Subcommittee on Agricultural Land Taxation.

Members from the House of Representatives appointed to the Subcommittee were chosen from the House Committee's thusly: one member serving on Agriculture, Livestock, and Irrigation; one member serving on Taxation; and two members serving on both of the Agriculture and Taxation Committees. The Senate members were selected from Senate Committee's in a similar fashion: two members from Agriculture, Livestock, and Irrigation; and two members from Taxation.

The Subcommittee met three times during the interim -- in August and December of 1983, and in early January of 1984. At each of the meetings a considerable amount of material was covered, material primarily related to new land valuation schedules. The Subcommittee also worked closely with and reviewed work done by another group of agriculturalists which was also studying agricultural land valuation.

The Department of Revenue's Advisory Council

The "other group of agriculturalists" referred to above was formally called the Advisory Council on Agricultural Land Valuation. This Advisory Council was appointed by the governor to assist the Department of Revenue's staff in developing updated agricultural land valuation schedules that would satisfy statutory provisions requiring periodic revaluation of all

property subject to taxation, and at the same time incorporate the (then) newly adopted legislative intent provisions.

The Advisory Council was comprised of 13 farmers, ranchers, and stockmen from all parts of the state. The Advisory Council's first meeting, in June of 1983, gave it somewhat of a head start over the interim Subcommittee. This head start proved to be beneficial to the Subcommittee, however, because much of the research necessary to the study required under HJR 35 had already been completed for the Advisory Council prior to the Subcommittee's first meeting. Rather than "reinventing the wheel", the Subcommittee relied on work done for and by the Advisory Council.

In addition to the work done for the Advisory Council, the Subcommittee reviewed several reports prepared by its own staff on the issues outlined in the Resolution. Those staff reports covered the historical development of agricultural land taxations; statutory and constitutional provisions relating to the issue; and options for revising agricultural land valuation schedules. Arguably, it was this work done for the Advisory Council and the staff reports which formed the basis for the Committee's conclusions and recommendation.

Subcommittee and Advisory Council Options

The Advisory Council and Subcommittee reviewed a number of revaluation options developed by Department of Revenue personnel and by the Subcommittee's staff. The options were based on four alternative methods of appraisal.

1. Potential Gross Income;
2. Adjusted Potential Gross Income;
3. Indexed Land Values; and
4. Capitalized Net Income.

Each of the alternatives was presented to and discussed by each of the groups at their respective first meetings. It was further the consensus of each group that the capitalized net income method of valuation was the most acceptable alternative for valuing agricultural lands. (Although the capitalized net income is discussed at length further in the report, a brief description here should prove beneficial.)

The capitalized net income method of valuation requires two variables to be defined: net income, and the capitalization rate. The equation can be illustrated fairly simply algebraically:

$$V = \frac{I}{R}$$

Where: V is value;
I is net income; and
R is the capitalization rate.

The algebraic simplicity of the equation belies the real complexity of determining value by this method. "Net income" as a concept is easily understandable, but precisely defining "income", and further defining what should be allowed as deductions to arrive at "net income" (I) is a formidable task. The determination of the capitalization rate (R) is equally as difficult.

The Subcommittee (and the Advisory Council) wrestled with this problem throughout the meetings. It was

finally agreed that that income for each type and production level of agricultural land should be based on two things:

1. The statewide 1977-1981 average return over variable cost (net income) per acre of "average" summer fallow land (calculated at $1.3951 and called factor B); and

2. The ratio of the existing (1963) value by production level and land type (called factor A) to the average net income per acre of summer fallow land (factor B above.)

This method guaranteed that the existing relationships of values between and among land types and production levels would not change, and further, that a factor relating to current (1977-1981) production value would be used to determine net income.

Arriving at an appropriate capitalization rate was equally as difficult. After considerable discussion, the Subcommittee recommended that the rate be comprised of the 5-year average Federal Land Bank discount rate and the estimated "effective tax rate" on agricultural lands. The 5-year period to be used was 1978 through 1982 and resulted in an average discount rate of 9.62%. The estimated effective tax rate was based on the taxable percentage rate applied to agricultural land, 30%, multiplied by the estimated average rural mill levy, 175 mills, or 5.3%. The resultant capitalization rate was the FLB discount rate (9.62%) plus the average effective tax rate (5.3%) equalling 14.92%.

After the net income and capitalization figures were established, the Subcommittee was surprised to see an indicated <u>decline</u> in the value of Montana's agricultural lands of approximately 59.5%. The indicated

decrease in value caused concern on two fronts. First, the Subcommittee was aware of the financial condition of Montana's local governments, including schools. It was that consensus of the group that any further erosion of local governments' tax bases could result in an unwanted fiscal situation. Secondly, the Subcommittee felt that even given the value decline indicated by the study, that the 49th Legislature would not concede that a 59.5 percent reduction in agricultural land value was warranted.

On the basis of the indicated decline in value and in recognition of the political realities of property taxation, the Subcommittee in January 1984 adopted the following recommendation:

> That the values currently applied to agricultural lands be adopted as the values to be used for the appraisal cycle beginning January 1, 1986, except that the values applied to irrigated lands be adjusted so that such land's values are not below the value such land would have if it were not irrigated.

Result of Recommendation

This recommendation was presented to the Legislature's Revenue Oversight Committee on January 13, 1984. The Subcommittee's findings of decreased land values and its position of preserving the property tax base were presented to the Revenue Oversight Committee as background to the recommendation. Although the recommendation was not accepted outright, neither was it rejected by the Revenue Oversight Committee.

At its March 1984 meeting, the Revenue Oversight Committee asked its staff to draft legislation embodying the Subcommittee's recommendation. The legislation (LC 0002) was developed and presented to the Revenue Oversight Committee in June of 1984. After several brief Committee discussions of the legislation at its June, August, and September meetings, the Revenue Oversight Committee adopted a motion to recommend the draft bill to the 49th Legislature. A copy of LC 0002 is included as Appendix H.

PART 2

HISTORICAL DEVELOPMENT OF AGRICULTURAL LAND TAXATION

Introduction

This part of the final report is adapted from a draft staff report developed for the Subcommitte in November of 1983.* It is a shallow discussion of some of the administrative aspects of agricultural land taxation, primarily an historical account.

Since Montana became a state in 1889 it appears that agricultural lands taxation has gone through at least five different periods, and may be beginning another. The first period covers Montana's early years as a state, from 1889 to 1896, when the entities designated to deal with tax issues first began executing their duties.

The second period, from 1896 to 1919, includes a time when the general property tax system began to exhibit a breakdown. The breakdown, manifested in fractional assessments, was due partially to a court decision which restricted the State Board of Equalization in fulfilling its duty regarding equalization, partially to the efforts of individual local assessors to gain local tax advantages, and partially to political

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* "Background Report on Agricultural Lands Taxation 1890-1983: A Report to the Joint Interim Subcommittee on Agricultural Lands Taxation", Montana Legislative Council, Helena, Montana, November, 1983.

factors which were not openly discussed in the literature but which are known to have existed through allusions in reports and historical accounts of the period.

In 1919 the legislature instituted a classified property tax system, within which was a separate classification for agricultural lands. While there had been administrative distinctions between classes of property before 1919, that was the first year statutory classification was applied.

The classification system adopted in 1919 continued with various changes until 1955. In 1955, the legislature recognized widespread inequities and called for a general reclassification and revaluation. Due to another court decision the provisions passed in 1955 had to be reenacted in 1957. The net effect was that reclassification and revaluation were still required.

Agricultural lands under the 1957 law were given special treatment relative to most other lands, and in 1963 the valuation of those lands was established with value based on "productive capacity" rather than the historical "full and true value". The 1963 valuations, expanded on occasion to include a range of production classes, remain unchanged.

However, with statutory provisions adopted in 1975 calling for a general reclassification and reappraisal, new assessment schedules were to be adopted (presumably by administrative rule) before 1986. It is because of that reappraisal effort that the Department of Revenue's Advisory Council on Agricultural Land Valuation

and the legislature's Joint Subcommittee on Agricultural Land Taxation were formed.

One final introductory remark: the several tables included in the discussion are primarily for illustrative purposes. There has been no attempt made to analyze any statistics or to draw any conclusions. The figures are merely to provide an historical acccunt.

Montana's Early Years of Taxation and the State Board of Equalization, 1889-1896

After 25 years as a territory and an unsuccessful attempt at gaining statehood, Montana became the 41st state in November of 1889. With its new status came new responsibilities, among them establishing a state government and providing revenue for its functions.

The State Board of Equalization (Board) was created by the 1889 Montana Constitution and was comprised of the "Governor, Secretary of State, State Treasurer, State Auditor, and Attorney General". The duties of the Board were to "adjust and equalize the valuation of the taxable property among the several counties", to assess the "franchise, roadway, roadbed, rails and rolling stock of all railroads operated in more than one county", and to "perform such other duties as may be prescribed by law."[1]

Historical accounts report that Montana's first legislature was somewhat less than well organized; it did not pass any revenue laws or appropriated any funds for the Board to carry out its constitutionally mandated duties.[2] (In fact, the First Legislature never did

organize, and consequently passed no bills.) The Board, undaunted by the lack of statutory authority or funding, employed personnel to carry out those requirements and by 1890 had already met and adopted rules by which their tasks would be carried out.[3] (The dedication shown in 1890 by the Board members and especially the clerk they hired was considerable; the clerk agreed to work for the Board on the hope that the Second Legislature would appropriate funds to cover his salary.[4])

By the mid-1890's, the Board was well acquainted with its then principal task of assessing railroads, and its other responsibilities, including equalizing assessments among the several counties. The Board had by that time adopted additional rules, not only for the function of the Board itself, but to implement legislation adopted during Montana's early years of statehood.

The primary law with which the Board was concerned was a law adopted in 1891 which addressed "revenue, taxation, and assessment".[5] This law detailed the duties and responsibilities of not only the Board, but of local assessors and county commissioners acting as local boards of equalization as well. Section 38 of the 1891 law required every county assessor to submit to the Board "the separate value of each class of land, specifying the classes and number of acres in each."[6]

Early Valuation

This separate valuation provision actually strengthened and perhaps legitimized rules previously adopted by the

Board. In its first Report, the Board published its rules, one of which, Rule VII, stated in part:

> . . . the Assessor . . . is hereby required to transmit to the State Board of Equalization a statement showing: When practicable, the separate value of each class of land, specifying the classes and number of acres of each, classifying into cultivated, arable, pasture, swamp, and overflowed, school and railroad lands.[7]

This listing was the beginning of distinguishing between the various types of agricultural lands.

By 1892 the Board had reacted to the 1891 "Act Concerning Revenue" by adopting additional rules detailing what information each assessor was to provide to the Board. This included a separate listing of the land (as required by section 38 of the Act) and improvements, defined in the rules as, "lots ploughed or tilled, fenced, trees planted thereon, structures erected thereon, or fixtures attached thereto."[8] The Board admonished the assessors to take great care in completing their reports and assessment forms and directed that all forms "must be fully filled up." The Board rules emphasized that:

> Great importance is attached to this report from the fact that the Board is enabled to gather therefrom, by a comparison of all reports, a correct estimate of the valuations made by the Assessors upon the several classes of property in the State, and determine therefrom what per centum to add to or deduct from the assessed value of the same.[9]

The 1891 "Act Concerning Revenue" and the subsequent rules adopted by the Board refined the constitutional requirements for the legislature to "levy a uniform

rate of assessment and taxation"[10] to acquire necessary revenues for the state, and that any such taxes levied be "uniform upon the same class of subjects."[11] These provisions further indicate why the distinction between lands was necessary.

In addition, since uniformity and equalization were dependent upon "valuation", the 1891 Act stated that the term "value" meant the amount at which the property would be taken in payment of a just debt due from a solvent debtor. The Act also required that all property be assessed at its full value, a necessity of the system.[12]

Boards of Appraisers

While the assessors had the responsibility of reporting and assessing property, the actual valuations of real estate for assessment purposes were to be established by local Boards of Appraisers. This appraisal board was comprised in each county of the chairman of the county commission, the county assessor, and "a reputable citizen, to be elected by the [other two members]."[13] The value established by this board was by statute the "true value" of the property. The boards of appraisers were eventually eliminated in 1903, (Ch. 1, Laws of Montana, 1903), and their functions transferred to the local assessors. (There was another Board of Appraisers created in 1913, but its duties were to assist a State Tax Commissioner and State Tax Commission rather than assuming the previous boards' original functions.)

Interestingly enough, the board of county commissioners was designated constitutionally as the local board of equalization, whose duty it was to "examine the assessment book and adjust and equalize the valuation of the taxable property of the county."[14] The local board of equalization, consequently, sat in judgement of property valuations established by the appraisal board. The county commission chairman, of course, was a member of both boards. To balance this process, the legislature in the 1891 revenue act designated the State Board of Equalization to

> . . . equalize the valuation of the taxable property of the several counties in this State for the purpose of taxation, and to that end under such rules of notice to the County Clerk of the county affected thereby as it may prescribe, to increase or lower an entire assessment roll, exclusive of money, or the total value of real estate, or the total value of improvements, or the total value of city and town lots, or the total assessed value of personal property, or the total assessed value of horses, cattle or sheep, contained in the assessment book so as to equalize the assessment of the property contained therein, and make the assessment conform to the true value in money of the property assessed.[15]

In addition to these duties and responsibilities, the Board was to prescribe rules "for its own government and for the transaction of business", and "to govern County Commissioners when equalizing and Assessors when assessing."[16]

Within the statutory authority to prescribe these rules the Board developed forms to be used by local assessors in record keeping and reporting. The forms adopted by the Board in February 1895 revealed an amended format

in that "classification of lands was changed to read 'Grain land, 1st and 2nd class; Hay land, 1st and 2nd class; grazing land, fenced and unfenced; timber land, suitable for logs, all other.'"[17] Ostensibly, the purpose of these provisions was that of equalization, or at least the basis on which the Board could equalize assessments. Equalization of values however was hardly more than an ideal; as later reported by a Tax and License Commission there were widespread inequities.

Although there were probably several reasons for the reported inequities, only a few can be known. Beyond the speculation that several assessors may have tried to gain tax advantages through fractional assessments,[18] an 1896 court decision undoubtedly was a contributing factor.

Fractional Assessments 1896-1919

In State ex rel. Wallace v. State Board of Equalization, (18 Mont. 473 (1896)), the court held that the Board could only equalize in a manner that resulted in an aggregate statewide valuation equal to that given to the Board by the local assessors and boards of equalization.[19] This, in effect, eliminated the ability of the Board to adjust valuations to full cash value.

The Board immediately recognized the implications of the decision and reported that "the power and authority vested in the State Board of Equalization . . . is annulled and made inoperative by the decision of the Supreme Court."[20]

TABLE 1

SELECTED DATA ON AGRICULTURAL LANDS
1890-1896

Year	Acres Assessed	Total Value	Average Value/Acre	Percent Change in Avg. Value/Acre
1890	4,930,196	$13,031,912	$2.64	----
1891	5,402,016	16,641,744	3.08	16.7
1892	5,737,841	15,854,376	2.76	(10.4)
1893	6,055,807	17,219,441	2.84	2.9
1894	6,523,346	15,675,856	2.40	(15.5)
1895	6,558,425	17,020,977	2.59	7.9
1896	7,726,240	17,069,855	2.21	(14.7)

SOURCES: Montana State Board of Equalization, Reports; 1890 through 1897; Helena, MT.

The Board's pleadings for statutory and Constitutional change went unheeded by successive legislatures until 1915. House Bill 22 in the legislative session of 1915 required submittal to the voters of a Constitutional amendment which would rectify the equalization problems resulting from the Wallace decision.[21] The amendment, which restored to the Board its original power regarding assessment equalization, won approval in the 1916 electicn.

Tax and License Commission

In 1917 the legislature acted to seriously consider Montana's tax and revenue situation by creating a Tax and License Commission. The purpose of the Commission was to conduct a general examination of taxes in Montana "with a view to gathering evidence and information and making recommendations which [would] be of assistance to the State Board of Equalization." The Commission was also to recommend to the legislature of 1919, in the form of a bill, appropriate measures to effect the provisions of the then recently amended Article XII of the Constitution, i.e. recommend a means of determining full and true value of all property and equalizing assessments statewide.[22]

Equal assessment, however, was more of a notion than a reality. The Commission reported that

> . . . instead of all property in Montana being assessed at its full cash value, we find a great lack of uniformity, not only as between different counties but also as between individuals, and almost a complete disregard of the statutory provisions relating to full value. About the only properties

Table 2

Selected Data on Agricultural Lands
1896-1914 *

Year	Total Acres Assessed	Total Assessed Value	Avg. Per Acre Value
1896	7,726,240	$17,069,855	$2.21
1897	7,886,094	17,821,955	2.26
1898	8,210,376	19,149,354	2.33
1899	9,123,673	20,499,746	2.25
1900	8,877,833	21,416,061	2.41
1901	8,651,348	23,185,370	2.68
1902	10,542,536	25,300,972	2.40
1903	12,060,904	28,804,095	2.39
1904	12,219,920	30,751,326	2.52
1905	13,255,102	32,602,864	2.46
1906	14,194,569	38,026,213	2.68
1907	14,975,584	44,181,386	2.95
1908	15,746,887	49,588,396	3.15
1909	15,770,887	55,360,948	3.51
1910	17,956,224	66,492,016	3.70
1911	19,167,871	77,134,702	4.02
1912	20,382,209	83,183,757	4.08
1913	22,541,034	96,162,714	4.27
1914	25,836,655	112,317,130	4.35

SOURCE: "Value Statement Issued in Lieu of Annual Reports", Historical Society: Helena, MT. Historical Society call number: S 353.9 Eq.

* Data for 1915-1919 is unavailable because the State Board of Equalization did not make reports for those years.

> in Montana assessed at full cash value are the net proceeds of mines and those moneys belonging to widows and orphans and executors of estates which are revealed by court records . . . .
>
> . . . The Commission has made an exhaustive examination of the assessments of different counties of the state, and has found a great lack of uniformity. . . . There are great differences in assessments upon the same classes of property, and in fact it cannot be said there is any approach to uniformity. It is generally conceded in this state that the present system of taxation is a failure and results in unjust discrimination and is utterly inadequate.[23]

The Commission, in meeting its statutory mandate, recommended that the state abandon its historical reliance on a general property tax and instead adopt a classified property tax system. In stating its rationale behind the recommendation, the Commission reported:

> It requires no profound wisdom to understand who is paying the taxes in Montana, nor why the tax burden is heavy and unequal on the owners of tangible property. Competitive undervaluation by counties and inequalities between property valuations in the same county are secondary abuses to be corrected by effective supervision, administration and equalization. The change from the present laws to the laws proposed [including a classified property tax system] is basic and all-important to secure equality.[24]

Perhaps as a result of the strong condemnation of the general property tax by the Tax and License Commission and the widespread perception of assessment inequalities, Montana's 30 year reliance on the general property tax changed in 1919.

Statutory Classification 1919-1955

Neither property taxation statutes nor rules adopted by the Board changed substantively between 1890 and 1919. But due primarily to widespread fractional assessments on all types of property, the legislature in 1919 adopted a classified property tax.[25] Agricultural lands were classified as Class Four property and taxed at 30 per cent of full and true value.[26]

Senate Bill 71, passed the same year, brought further classification of property. Rather than simply grouping real property into "all lands" as was required by the classification bill (House Bill 30 in 1919), land was to be further classified as agricultural; irrigated or non-irrigated; timber and stump lands; grazing [lands]; lands bearing stone, coal or valuable deposits; and lands bearing natural gas, petroleum or other mineral deposits. Senate Bill 71 also authorized the State Board of Equalization to "provide for such other and additional subdivisions of classification . . . as they may deem proper."[27]

Where the Board had previously had the authority to adjust and equalize valuations, House Bill 71 of 1919 made it the Board's duty to do so. The bill's provisions had been authorized and perhaps required by the

TABLE 3

SELECTED DATA ON AGRICULTURAL LANDS
1920 - 1955

Year	Total Acres Assessed	Avg. Per Acre Value	% of Total Taxable Value	Total Acres Irrigated	Avg. Per Acre Value Irrigated	% of Total Taxable Value	Total Acres Grazing	Avg. Per Acre Value Grazing	% of Total Taxable Value	Total Non-Irrig. Acres	Avg.Per Acre Value Nonirrig.	% of Total Taxable Value
1920	41,903,828	$ 14.92	NA	NA	NA	NA	NA	NA	NA	NA	NA	Na
1921	32,139,143	14.77	NA	1,036,193	$51.08	NA	12,965,385	$ 6.93	NA	NA	NA	NA
1922	32,371,467	12.65	26.4	1,160,398	51.38	3.5	16,126,621	6.51	6.0	NA	NA	NA
1923[a]	49,358,726	11.04	20.0	1,631,374	51.15	5.4	21,621,886	6.08	8.5	NA	NA	NA
1924	49,847,108	10.10	18.2	1,467,567	52.37	5.2	26,421,677	5.39	9.7	NA	NA	NA
1925[b]	50,388,392	9.59	37.8[c]	1,468,200	50.95	5.2	28,785,308	4.96	10.0	19,382,223	$13.44	18.2
1930	52,025,714	8.88	35.6	1,511,301	46.48	4.9	30,490,074	4.54	9.4	19,129,606	12.98	17.0
1935	50,743,993	6.08	32.4	1,458,734	34.66	4.6	31,097,147	3.12	8.8	17,648,924	8.97	14.3
1940	46,956,924	5.17	27.9	1,467,149	33.20	4.6	30,629,744	2.64	7.9	14,506,498	7.70	11.1
1945	49,903,092	5.03	24.9	1,513,271	32.29	4.1	34,013,831	2.59	7.3	14,101,572	8.00	9.4
1950	51,602,341	5.16	21.5	1,582,902	32.68	3.5	35,354,883	2.65	6.2	14,456,697	8.31	7.9
1955	52,740,853	5.26	18.7	1,654,166	32.33	2.7	36,031,319	2.68	5.0	14,845,000	8.47	6.4

[a]Prior to 1923, ag lands acreages were reported only in aggregate numbers. In the 1923 Board of Equalization Report, ag lands were separated as were mines, industrial property, etc. It is not clear what was included in "all lands" in the Reports prior to 1923, but in 1923 and afterwards the indication is that Grazing, Irrigated, and Non-irrigated, State Grazing, and Mineral Reservation values are included in "all lands." This applies to columns 1, 2, and 3.

[b]"Total Acres Assessed" column includes Irrigated, Non-Irrigated, Grazing, and State Lands Under Contract after 1924. (2nd Biennial Report).

[c]Includes improvements on all ag lands after 1924.

SOURCES: Montana State Board of Equalization Reports, 1920-1955; Helena, MT.

TABLE 4

SELECTED DATA ON AGRICULTURAL LANDS
1920 - 1955

Year	High Avg. Value (Co.)	Low Avg. Value (Co.)	High Avg. Value Irrig. (Co.)	Low Avg. Value Irrig. (Co.)	High Avg. Value Grazing (Co.)	Low Avg. Value Grazing (Co.)	High Avg. Value Non-Irrig. (Co.)	Low Avg. Value Non-Irrig. (Co.)
1920	$27.93 (Gallatin)	$ 7.08 (Custer)	NA	NA	NA	NA	NA	NA
1921	43.94 (Mineral)	5.94 (Beaverhead)	$ 87.25 (Gallatin)	$24.83 (Silver Bow)	$13.29 (Cascade)	$ 4.47 (Dawson)	NA	NA
1922	32.07 (Mineral)	5.10 (Custer)	68.42 (Ravalli)	18.00 (Glacier)	11.97 (Cascade)	3.37 (Treasure)	NA	NA
1923[a]	38.50 (Flathead)	4.80 (Beaverhead)	103.07 (Yellowstone)	20.00 (Glacier)	13.67 (Flathead)	2.40 (Fallon)	NA	NA
1924	38.50 (Flathead)	5.97 (Rosebud)	85.28 (Missoula)	20.00 (Glacier)	13.03 (Flathead)	2.50 (Musselshell)	NA	NA
1925	20.89 (Flathead)	4.36 (Rosebud)	85.00 (Yellowstone)	18.33 (Silver Bow)	10.00 (Flathead)	2.40 (Fallon)	$38.16 (Flathead)	$ 5.98 (Rosebud)
1930	19.84 (Ravalli)	3.68 (Rosebud)	69.66 (Missoula)	17.15 (Phillips)	8.55 (Cascade)	2.30 (Custer)	52.11 (Flathead)	4.92 (Rosebud)
1935	14.85 (Lake)	3.05 (Rosebud)	63.32 (Yellowstone)	13.90 (Roosevelt)	5.43 (Judith Basin)	1.79 (Jefferson)	33.34 (Flathead)	4.00 (Stillwater)
1940	12.39 (Ravalli)	2.34 (Garfield)	62.56 (Yellowstone)	12.27 (Roosevelt)	4.53 (Flathead)	1.26 (Jefferson)	32.84 (Flathead)	3.09 (Petroleum)
1945	12.43 (Lake)	2.12 (Garfield)	60.93 (Yellowstone)	11.51 (Silver Bow)	4.35 (Judith Basin)	1.27 (Jefferson)	32.19 (Flathead)	3.11 (Petroleum)
1950	12.31 (Lake)	2.04 (Garfield)	61.48 (Yellowstone)	12.21 (Roosevelt)	4.52 (Lake)	1.13 (Wibaux)	30.15 (Flathead)	3.14 (Petroleum)
1955	13.67 (Lake)	2.03 (Garfield)	61.45 (Yellowstone)	11.71 (Roosevelt)[b]	4.50 (Lake)	1.15 (Wibaux)	33.16 (Flathead)	3.25 (Wheatland)

[a] See footnote "a" on Table 3.
[b] The 17th Biennial Report actually listed Sanders County at $2.86 per acre average value, but due to other data this appears to be a clerical error.

SOURCES: Montana State Board of Equalization Reports, 1920-1955; Helena, MT.

amendment to Article XII, section 15, of the Montana Constitution approved by the voters in 1916.

The classified property tax system established in the 1919 legislative session ran into a minor problem in 1921. House Bill 30 of 1919 (Ch. 89, Laws of Montana, 1919) was declared unconstitutional by the Montana Supreme Court in its decision in Stoner v. Timmons, (59 Mont. 158, 196 Pac. 519 (1921)). The 1921 legislature took the setback in stride, however, by reenacting substantially identical provisions except those which the court had declared unconstitutional.[28]

One additional change passed by the 1921 Legislature was a proposed Constitutional amendment to revise the make-up of the State Board of Equalization to consist of three members to be appointed by the Governor and approved by the Senate. The amendment was approved by the voters in the 1922 general election.

1955-1963 Classification Refined

The statutory provisions relative to classification of lands and the taxable valuation thereon remained generally unchanged until 1955. The manner in which the Board reviewed the classification and valuation of lands, including those designated as various types of agricultural lands, was also substantially unaltered until 1955. That year the legislature passed Senate Bill 128 which required boards of county commissioners, under the direction of the State Board of Equalization, to reclassify and reappraise all real property in each of the respective counties.[29]

TABLE 5

SELECTED DATA ON AGRICULTURAL LANDS
1955-1963

Year	Total Acres Assessed	Avg. Per Acre Value	% of Total Taxable Value	Total Acres Irrigated	Avg. Per Acre Value Irrigated	% of Total Taxable Value	Total Acres Grazing	Avg. Per Acre Value Grazing	% of Total Taxable Value	Total Non-irrig. Acres	Avg. Per Acre Value Nonirrig.	% of Total Taxable Value
1955 a	52,740,853	$5.26	18.7	1,654,166	$32.33	2.7	36,031,319	$2.68	5.0	14,845,318	$8.47	6.4
1956	52,797,384	5.34	18.0	1,806,552	30.58	2.6	36,268,812	2.74	4.8	14,522,720	8.69	6.1
1957	52,874,444	5.46	17.9	1,794,960	30.53	2.6	36,684,379	2.75	4.7	14,208,988	8.88	6.2
1958	53,076,277	5.51	17.5	1,803,655	28.92	2.5	36,833,762	2.76	4.6	14,282,705	9.43	6.1
1959	53,153,765	5.54	17.8	1,772,526	30.67	2.4	36,874,803	2.77	4.6	14,353,184	9.53	6.1
1960	53,288,724	5.66	17.9	1,991,202	27.31	2.4	35,973,046	2.81	4.4	15,169,944	9.57	6.3
1961	53,312,989	5.65	18.1	1,600,032	32.56	2.3	36,948,290	2.80	4.5	14,402,554	9.89	6.2
1962	53,375,007	5.66	18.3	1,588,121	32.60	2.2	37,005,334	2.81	4.5	14,445,543	9.90	6.2
1963	53,416,723	6.30	19.3	1,477,428	33.03	2.0	38,807,403	3.18	5.0	12,622,753	12.43	6.4

a Figures in columns 1, 2 and 3 include Irrigated, Non-Irrigated Tillable, Grazing and State Lands classifications. The percentage of total taxable value in column 3 also includes improvements on the above lands.

SOURCES: Montana State Board of Equalization Reports, 1955-1963; Helena, MT.

Prior to the adoption of Senate Bill 128 in 1955, all lands were to be appraised at full value, defined as "the amount at which the property would be taken in payment of a just debt due from a solvent debtor."[30] Also, lands were previously classified by statute and could be further categorized by the board.[31] The 1955 bill is especially important in that the methods for classification and appraisal of lands were to be established by the Board. Section 6 of Senate Bill 128 read:

> It is hereby made the duty of the state board of equalization to implement the provisions of this act by providing:
>
> 1. For a general and uniform method of classifying lands in the State of Montana for the purpose of securing an equitable and uniform basis of assessment of said lands for taxation purposes.
>
> All lands shall be classified according to their use or uses and graded within each class according to soil and productive capacity. In such classification work, use shall be made of soil surveys and maps and all other pertinent available information. All lands must be classified by forty (40) acre tracts or fractional lots.
>
> 2. For a general and uniform method of appraising city and town lots.
>
> 3. For a general and uniform method of appraising rural and urban improvements.

Ironically perhaps, the law was held unconstitutional in Schladweiler v. St. Bd. of Equalization in 1957, (131 Mont. 13; 206 Pac. 2d 673) on the same grounds as the original land classification act (Ch. 89, Laws of

Montana 1919) had been in 1921, i.e., unequal taxation of property.*

The 1957 legislature reacted in the same manner as the 1921 legislature had acted: substantially identical provisions were adopted, exclusive of those declared unconstitutional.[32]

Valuation Schedules 1963-1982

As a result of the 1957 classification and appraisal effort, assessment schedules for agricultural lands were adopted by the Board in 1963 for agricultural lands.[33] The schedules divided agricultural lands into five general categories -- non-irrigated farm land, wild hay land, grazing land, non-irrigated continuously cropped farm land, and tillable irrigated lands -- and each category into several production classes. By adopting these schedules the Board met the requirements of section 6 of the 1957 bill. A copy of those schedules is included as Appendix A.

Changes Under the New Constitution

In 1972 Montana voters adopted a new state Constitution. Although there were changes between the 1889 and 1972 documents, the changes relative to property taxation were not so much deletions of old provisions or additions of new ones as they were a shift in the responsibilities given to the legislature. One change, however, was substantial and should be noted.

* The 1919 and 1955 laws both imposed a tax on one class of property not imposed on any other class. The Court found this to be a form of taxation not provided for in the Constitution, and voided both laws.

The 1889 Constitution established a state Board of Equalization and, even as amended in 1922, outlined the Board's duties and responsibilities. The new Constitution provides only that the state is responsible for appraisal, assessment, and equalization in the manner provided by law. The provisions of Article VIII of the new Constitution put the responsibility clearly on the shoulders of the legislature, and do not establish requirements and restrictions beyond fundamental principles.

The legislature reacted to the new constitutional provisions in 1973 by transferring the duties of the Board of Equalization to the Department of Revenue and to an independent State Tax Appeals Board. The Department of Revenue was made responsible, through these changes, to classify and appraise property, a function previously done by local assessors and their staffs.*

Periodic Revaluation

In 1975, the legislature required the Department to administer and supervise a program for the revaluation of all taxable property within the state at least every five years.[34] The first revaluation of agricultural land was completed in 1978. The current reappraisal effort, initially to be completed by January 1, 1984, was rescheduled in 1981 to be completed by January 1, 1986.

* The Department continued assessing railroads and other utilities, mines, etc., and establishing assessment schedules for agricultural lands as the Board had done in the preceding years.

TABLE 6

SELECTED DATA ON AGRICULTURAL LANDS
1955-1963

Year	High Avg. Value (Co.)	Low Avg. Value (Co.)	High Avg. Value Irrig. (Co.)	Low Avg. Value Irrig. (Co.)	High Avg. Value Grazing (Co.)	Low Avg. Value Grazing (Co.)	High Avg. Value Non-Irrig. (Co.)	Low Avg. Value Non-Irrig. (Co.)
1955	$13.67 (Lake)	$2.03 (Garfield)	$61.45 (Yellowstone)	$11.71 (Roosevelt)	$4.50 (Lake)	$1.15 (Wibaux)	$33.16 (Flathead)	$3.25 (Wheatland)
1956	$12.73 (Lake)	$ 2.03 (Garfield)	$60.51 (Yellowstone)	$11.73 (Roosevelt)	$4.49 (Lake)	$1.31 (Wibaux)	$30.99 (Flathead)	$3.24 (Wheatland)
1957	$19.79 (Pondera)	$ 2.03 (Garfield)	$60.23 (Yellowstone)	$11.59 (Roosevelt)	$5.41 (Pondera)	$1.31 (Wibaux)	$30.72 (Flathead)	$3.20 (Wheatland)
1958	$19.32 (Pondera)	$ 2.03 (Garfield)	$60.58 (Yellowstone)	$11.47 (Roosevelt)	$5.37 (Pondera)	$1.63 (Rosebud)	$30.48 (Flathead)	$3.26 (Wheatland)
1959	$19.16 (Pondera)	$ 2.03 (Garfield)	$60.97 (Yellowstone)	$11.91 (Roosevelt)	$5.33 (Pondera)	$1.63 (Rosebud)	$30.71 (Flathead)	$3.24 (Wheatland)
1960	$17.45 (Pondera)	$ 2.03 (Garfield)	$60.87 (Yellowstone)	$11.82 (Roosevelt)	$5.62 (Pondera)	$1.63 (Rosebud)	$30.80 (Flathead)	$2.24 (Powder River)
1961	$17.47 (Pondera)	$ 2.03 (Garfield)	$60.94 (Yellowstone)	$11.89 (Roosevelt)	$5.56 (Pondera)	$1.81 (McCone)	$30.72 (Flathead)	$3.33 (Wheatland)
1962	$17.43 (Pondera)	$ 2.03 (Garfield)	$59.35 (Yellowstone)	$11.97 (Roosevelt)	$5.50 (Pondera)	$1.81 (McCone)	$32.14 (Granite)	$3.30 (Wheatland)
1963	$16.09 (Pondera)	$ 2.03 (Garfield)	$57.92 (Carbon)	$12.78 (Sanders)	5.98 (Judith Basin)	$1.84 (Garfield)	$29.96 (Flathead)	$3.46 (Petroleum)

SOURCES: Montana State Board of Equalization Report(s), 1955-1963; Helena, MT.

TABLE 7

SELECTED DATA ON AGRICULTURAL LANDS
1963-1982

Year	Total Acres Assessed	Avg. Per Acre Value	% of Total Taxable Value	Total Acres Irrigated	Avg. Per Acre Value Irrigated	% of Total Taxable Value	Total Acres Grazing	Avg. Per Acre Value Grazing	% of Total Taxable Value	Total Non-irrig. Acres	Avg. Per Acre Value Nonirrig.	% of Total Taxable Value
1963 a	53,416,723	$ 6.30	b 1.93	1,477,428	$ 33.03	2.0	38,807,403	$ 3.18	5.0	12,622,753	$ 12.43	6.4
1964	53,097,897	6.60	1.92	1,422,272	33.24	1.9	39,129,917	3.29	5.1	11,765,938	13.80	6.4
1965	52,140,624	6.76	1.86	1,387,360	33.04	1.8	38,449,691	3.34	4.9	11,503,264	14.33	6.3
1966	52,148,718	6.72	1.73	1,363,159	32.54	1.6	38,468,470	3.31	4.6	11,487,833	14.37	6.0
1967	52,153,777	6.73	1.69	1,359,832	32.56	1.6	38,476,359	3.31	4.5	11,483,848	14.41	5.8
1968	52,114,343	6.78	1.67	1,362,514	32.53	1.5	38,397,218	3.32	4.4	11,523,229	14.56	5.8
1969	52,145,015	6.78	1.59	1,353,867	32.79	1.5	38,475,078	3.32	4.2	11,477,793	14.60	5.5
1970	52,141,817	6.78	1.55	1,351,851	32.75	1.4	38,475,439	3.32	4.0	11,479,040	14.65	5.3
1971	52,079,411	6.86	1.56	1,361,504	32.75	1.4	38,330,977	3.32	4.0	11,520,596	14.88	5.3
1972	52,037,832	7.08	1.55	1,362,485	32.71	1.3	38,287,553	3.37	3.9	11,514,455	15.66	5.4
1973	51,773,311	7.30	c 1.07	1,363,171	32.92	1.3	37,976,082	3.39	3.6	11,540,777	16.42	5.4
1974	49,989,087	7.44	9.6	1,279,346	32.19	1.2	36,483,041	3.44	3.5	11,337,870	16.81	5.3
1975	51,113,548	e 7.57	8.6	1,364,033	33.26	1.0	37,285,360	3.43	2.8	11,575,222	17.17	4.4
1976	51,075,828	e 7.49	8.3	1,370,765	32.69	1.0	37,210,260	3.42	2.7	11,601,771	16.88	4.2
1977	50,700,160	e 7.57	7.9	1,367,438	32.79	d 0.9	37,340,504	3.40	d 2.6	11,102,770	17.71	d 4.0
1978	50,982,382	e 9.12	8.9	1,490,497	32.01	d 0.9	36,789,746	3.58	d 2.5	11,605,171	23.01	d 5.1
1979	50,850,682	e 9.12	8.6	1,458,570	32.07	d 0.9	36,614,643	3.56	d 2.4	11,696,932	22.92	d 5.0
1980	51,237,818	e 9.09	7.6	1,447,377	32.14	d 0.8	37,006,708	3.56	d 2.1	11,692,313	23.03	d 4.4
1981	50,997,572	e 9.14	6.7	1,450,717	e 32.03	0.7	36,749,758	e 3.56	1.9	11,697,974	e 23.11	4.0
1982	51,123,910	e 9.14	6.4	1,665,173	e 30.18	0.7	36,522,530	e 3.55	1.8	11,852,592	e 22.68	3.7

SOURCES: Montana State Board of Equalization Reports; 1963-1972.
Montana Department of Revenue Reports, 1972-1882.

a The State Board of Equalization Reports indicate that State Grazing Land is included in the Grazing Land figures beginning in 1963.
b The values in column 3 include improvements on all ag lands through 1972.
c Percentage of Total Taxable Value in 1974 and afterwards excludes improvements on the land.
d Taxable values not reported; staff estimates.
e Average values not reported; staff estimates.

As a result of the required revaluation, the Department began developing optional agricultural land valuation schedules in 1981. By August 1982, the Property Assessment Division of the Department had developed four alternative methods of revising the valuation schedules.[35] Since the early development of the (revalued) schedules, the Department and numerous agricultural groups gave considerable attention to the process.[36]

Following the distribution of the options to the various agricultural groups in August of 1982 and the Department's presentation of the options to the legislative Revenue Oversight Committee[37] in September of the same year, the Department proposed the adoption of the revised schedules in January 1983.[38] Two public hearings were held in February 1983 on the proposed schedules. As a result of the hearings and other factors, more specifically the legislature being in session at the time, the Department was precluded from implementing any changes to the valuation schedules before January 1986.[39]

Shortly after the legislature adjourned in April of 1983, the Department formed an Advisory Council on Agricultural Land Valuation, the membership of which was made up of agriculturalists from across the state. The charge of the Council was to assist the Department in the development of revised agricultural lands valuation schedules.

Additionally, during the session the legislature adopted House Joint Resolution 35 calling for an interim study of agricultural lands taxation by a select group of legislators. That study was conducted

TABLE 8

SELECTED DATA ON AGRICULTUPAL LANDS
1963-82

Year	High Avg. Value (Co.)	Low Avg. Value (Co.)	High Avg. Value Irrig. (Co.)	Low Avg. Value Irrig. (Co.)	High Avg. Value Grazing (Co.)	Low Avg. Value Grazing (Co.)	High Avg. Value Non-Irrig. (Co.)	Low Avg. Value Non-Irrig. (Co.)
1963	16.09 (Pondera)	2.43 (Rosebud)	57.92 (Carbon)	12.78 (Sanders)	5.98 (Judith Basin)	1.84 (Garfield)	29.96 (Flathead)	3.46 (Petroleum)
1964	17.63 (Flathead)	3.03 (Rosebud)	56.02 (Big Horn)	10.70 (Petroleum)	5.85 (Judith Basin)	1.81 (Jefferson)	31.43 (Flathead)	5.06 (Treasurer)
1965	17.68 (Flathead)	3.01 (Rosebud)	56.77 (Missoula)	10.75 (Petroleum)	6.65 (Lake)	1.79 (Jefferson)	33.95 (Sanders)	5.48 (Silver Bow)
1966	17.94 (Flathead)	3.01 (Rosebud)	52.85 (Stillwater)	10.71 (Petroleum)	6.11 (Lake)	1.79 (Jefferson)	31.89 (Sanders)	5.56 (Silver Bow)
1967	17.92 (Flathead)	3.02 (Rosebud)	52.84 (Stillwater)	10.76 (Petroleum)	6.09 (Lake)	1.79 (Jefferson)	31.89 (Sanders)	5.89 (Silver Bow)
1968	18.83 (Flathead)	3.04 (Rosebud)	52.95 (Stillwater)	10.76 (Petroleum)	6.54 (Lake)	1.80 (Jefferson)	33.17 (Flathead)	4.94 (Silver Bow)
1969	18.85 (Flathead)	3.01 (Rosebud)	52.74 (Stillwater)	10.74 (Petroleum)	5.93 (Judith Basin)	1.77 (Jefferson)	33.30 (Flathead)	6.35 (Deer Lodge)
1970	20.69 (Flathead)	3.01 (Rosebud)	53.08 (Stillwater)	10.74 (Petroleum)	5.90 (Judith Basin)	1.85 (Jefferson)	35.18 (Flathead)	6.17 (Deer Lodge)
1971	25.91 (Flathead)	3.02 (Rosebud)	52.92 (Stillwater)	10.75 (Petroleum)	7.45 (Flathead)	1.86 (Jefferson)	39.62 (Flathead)	6.32 (Deer Lodge)
1972	26.48 (Flathead)	3.01 (Rosebud)	52.93 (Stillwater)	10.52 (Petroleum)	7.95 (Flathead)	1.85 (Jefferson)	39.76 (Flathead)	6.31 (Deer Lodge)
1973	26.82 (Flathead)	3.02 (Rosebud)	52.94 (Stillwater)	11.37 (Garfield)	8.02 (Flathead)	1.86 (Jefferson)	40.66 (Flathead)	6.84 (Garfield)
1974	29.67 (Flathead)	3.01 (Rosebud)	53.04 (Stillwater)	11.37 (Garfield)	8.23 (Flathead)	1.86 (Jefferson)	46.30 (Flathead)	7.47 (Carter)
1975	NA	NA	53.36 (Flathead)	11.37 (Garfield)	8.32 (Flathead)	1.94 (Jefferson)	48.25 (Flathead)	6.97 (Carter)
1976	NA	NA	53.38 (Flathead)	11.37 (Garfield)	8.37 (Flathead)	1.93 (Jefferson)	48.27 (Flathead)	7.29 (Carter)
1977	NA	NA	53.23 (Flathead)	11.37 (Garfield)	8.30 (Flathead)	1.92 (Jefferson)	48.26 (Flathead)	7.53 (Carter)
1978	NA	NA	53.64 (Treasure)	14.05 (Powder River)	8.91 (Missoula)	1.92 (Jefferson)	51.24 (Flathead)	7.84 (Deer Lodge)
1979	NA	NA	52.93 (Treasure)	14.05 (Powder River)	8.08 (Ravalli)	1.91 (Jefferson)	50.95 (Flathead)	8.90 (Deer Lodge)
1980	NA	NA	52.95 (Treasure)	14.05 (Powder River)	8.05 (Ravalli)	1.89 (Jefferson)	51.14 (Flathead)	8.90 (Deer Lodge)
1981	NA	NA	NA	NA	NA	NA	NA	NA
1982	NA	NA	NA	NA	NA	NA	NA	NA

SOURCES: Montana State Board of Equalization Reports 1963-73;

by the Joint Interim Subcommittee on Agricultural Lands Taxation during the 1983-1985 interim.

The Subcommittee's study resulted in a recommendation to continue the use of the 1963 agricultural land valuations for the 1986-1991 appraisal cycle. That recommendation was finally embodied in draft legislation (LC 0002) recommended to the 49th Legislature by the Revenue Oversight Committee.

PART 3

ELEMENTS OF A TAX BILL

INTRODUCTION

This part of the final report was adapted from a draft report prepared for and presented to the Joint Interim Subcommittee on Agricultural Land Taxation in December of 1983. The draft was developed as an information document, the principal purpose of which was to give the Subcommittee members some detailed descriptions of how agricultural land taxes were developed.

The report first addresses the components of a tax bill: classification, assessment, taxable value, and levies. In the second section is included a discussion of both technical and policy considerations. A discussion of what occurred with valuation revisions from August 1982 through January 1984 is contained in the following section. The effort there is merely to inform those not involved in the process of what took place during that time. Next, a review of several valuation methods proposed by the Department of Revenue is presented in some detail. Finally discussed are the recommendations made by the Advisory Council on Agricultural Land Valuations in September 1983 and by the Revenue Oversight Committee in December 1984.

Several of the alternative valuation methods are contained in the appendices. A quick perusal of those appendices might prove helpful before undertaking the general discussion.

FACTORS AFFECTING THE TAX LEVEL

The "bottom line" of a tax bill on agricultural land is the result of several factors. These factors include the land's classification, appraisal (valuation), taxable valuation, and total levies, and apply not just to agricultural land taxes, but to all property taxes.

Two of these factors, classification and appraisal are technical operations. The other two, taxable valuation and levies, involve policy considerations. Each of the factors is discussed more thoroughly below.

Classification

Classification refers to two things: classification for tax purposes under Title 15, chapter 6, MCA, and, for agricultural lands, a further administrative classification.

Montana law requires that "all agricultural lands shall be classified according to their use or uses and graded within each class according to soil and productive capacity." (§15-7-103, MCA.) While this specific provision dates back to 1957 (Ch. 191, Laws of Montana, 1957), distinctions between different types of land for tax purposes can be traced to before 1900.

Natural characteristics considered in determining land classification and "productive capacity" include soil type, rainfall, growing season, and topography. Other indicators such as production history and comparable operations are also used in this determination. The result of this examination is designating each parcel of land as one of five types of agricultural land:

tillable irrigated, tillable non-irrigated (summer fallow), grazing, nonirrigated continuously cropped, or wild hay land.

Once the determination has been made as to the type of land, the production capacity is further determined by an examination of the other factors mentioned. For example, a given parcel may first be determined to be summer fallow land and further to have an annual production capacity of 24 bushels of wheat per acre. This combination would result in a classification of F1A land, the designation giving both the land type, (F meaning summer fallow) and the production capacity, (1A meaning 24-25 bushels per acre.)

This process is repeated for each parcel of agricultural land. For many farm and ranching operations the classification process results in a mosaic of land types and production classes. Each type and production class is listed separately and then each is separately assessed.

Assessment

Determining the value of land or other property has been given several names -- appraisal, assessment, valuation, etc. For the purpose of this discussion they all mean the same thing, i.e. the appraised value is the assessed value.

For agricultural lands each land type and production class is assigned a separate value. This value is listed on schedules actually developed in 1963 by the now defunct State Board of Equalization and later

adopted and amended by the Department of Revenue. The schedules are printed as sections 42.20.141 through 42.20.146 Administrative Rules of Montana (ARM). (See Appendix A.)

Finding the value of land in the valuation schedules is a simple task once the land type and production level is known. However, establishing the valuation schedules for each land type and production class is a very complicated task. (An entire section further in this discussion examines how those values can be established.)

Taxable Value

Taxable value has both a technical component and a policy component.

The technical component occurs when the assessed value of the land is multiplied by a designated percentage resulting in a "taxable value". The taxable value is the value against which all property tax levies are applied.

The designated percentage mentioned above is more commonly referred to as the "taxable percentage" or "taxable rate". This rate, the policy component, is determined by the legislature. Currently the taxable rate on agricultural lands is 30% (of assessed value). This rate was first set in 1919 (the year in which Montana adopted a classified property tax system) and has not changed since then.

Levies

Levies also have both a technical and a policy component.

The technical component is a simple arithmetic process of multiplying the taxable value by the number of mills levied. The policy component is the amount of the levy.

Although there are several separate entities which have the authority and responsibility to set levies, the setting of levies is a policy consideration for each entity. The amount of each levy set by the separate entities is the final factor in the tax bill formula.

OTHER FACTORS INFLUENCING A TAX BILL

Technical Elements

As mentioned previously, there are several technical components and procedures affecting a tax bill. The manner in which each of these procedures is executed can influence the bottom line. Obviously, if the mathematical procedures are not carried out precisely, errors will result.

Perhaps not as obvious but equally as important, other procedures, if not executed consistently, can also influence the tax bill.

For example, if in classifying land, accurate production figures are not used, an invalid production capacity will be attributed to the land resulting in an inaccurate assessment and an inaccurate tax bill.

Or, if land in one area of the state is classified differently than land in another area that is virtually the same, the result is one tax bill inequitable to the other. If either of these situations -- or others just as significant -- occur, inequities are inevitable. A worse situation could arise if any combination of inconsistencies occurs.

Policy Elements

The policy elements considered in tax matters are obvious in most respects but may be more subtle in others. For example, when the legislature set the taxable value of agricultural land in 1919 at 30% of assessed value, it was fairly simple to compare that 30% rate to the (1919) 30% rate for residences. Since the requirements at the time were to assess each's value on the "true value" of the property (defined as the price paid for the property to a willing seller by a willing buyer), it was fair to assume that agricultural land and homes bore a relatively equitable burden.

However, when some classes of property are assessed using different measure of market value, e.g. net proceeds, gross proceeds, comparable sales, productive capacity, etc., any assumptions are risky. To illustrate this, the Department of Revenue has determined a reasonable approximation of the effective rural tax rate at 5.3% (175 mills x 30% taxable rate). How this compares to a reasonable approximation of an effective urban residential tax rate of 2.565% (300 mills x 8.55% taxable rate) is difficult to assess, primarily because

the assessed values for the respective types of property are based on different measures.*

Beyond arithmetic calculations and the complexities associated with the "art" of appraisal, there are still

other policy considerations. The taxable percentage set by the legislature has already been touched on, as have individual state and local levies. One consideration essential to this discussion is what measure is used to determine assessed valuation.

Section 15-8-111(1), MCA, requires that "all taxable property must be assessed at 100% of its market value." The concept of "market value" is defined in section 15-8-111 (2) as "the value at which property would change hands between a willing buyer and a willing seller, neither being under any compulsion to buy or sell and both having reasonable knowledge of relevant facts."

However, there are three classes of property specifically exempted from the "market value" assessment requirement. One of those classes includes agricultural lands.

Under §15-6-133, MCA, agricultural land is taxed at "30% of its productive capacity". There is no question that the legislative intent under Title 15, chapter 7, part 2, MCA, is such that agricultural lands are to be assessed and taxed differently than most other types of property, i.e. productive capacity vis a vis market

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* Since comparable sales is the principal measure for residential property (and other types) and productive capacity is the measure for agricultural land, and

value. This is clearly a policy consideration, one that has existed in Montana statutes for 25 years.

A difficulty arises, however, because it is not clear precisely how "productive capacity" is determined. The Department of Revenue has the responsibility to make that determination, and has historically done so by adopting administrative rules. These rules have taken the form of valuation schedules, more specifically a series of tables establishing the value of land based on crop type and crop production. (This was discussed under Classification and Assessment above and is discussed thoroughly under DETERMINATION OF PRODUCTIVE CAPACITY later in this part of the report.)

According to Department of Revenue personnel, the valuation tables currently in use were initially adopted in 1963 with several amendments implemented since then. The valuations are substantially the same today as when they were first adopted in 1963. The amendments only expanded the tables to include several other production categories; the values remain unchanged.

Under sections 15-7-103 and 15-7-111 through 15-7-114, MCA, the Department is required to periodically revalue all property for tax purposes. Such a revaluation is currently being undertaken, including a revaluation of agricultural lands.

The Department began developing new valuation schedules in 1981. By August 1982, the Property Assessment

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since either method is an acceptable determination of market value, any analysis aimed at evaluating equity becomes increasingly complex.

Division of the Department had developed four alternative methods of revising the valuation schedules. The Department and numerous agricultural groups have given considerable attention to this process since it began.

August 1982 Recommendation - Department of Revenue

The first recommendation made by the Department, in August 1982 and again in September 1982 (to the Revenue Oversight Committee), was to value agricultural lands using an adjusted gross income method. The reasons for recommending this method included readily available data, ease of understanding, ease in updating, and that the method met the production requirement in the statutes. The values derived using this method would have resulted in an average reduction in the value of summer fallow land of 18.3%, an average reduction in continuously cropped land values of 14.6%, an average reduction in grazing land values of 2.4%, an average increase in the value of wild hay of 162.5%, and increases in the value of irrigated tillable lands from between 31.7% and 59.8%.*

As noted previously, this alternative, as well as three others, was sent by the Department to various agricultural groups for comments. In a September 7, 1982 letter to Leslie Saisbury, the Department's Agriculture and Timber Tax Bureau Chief, representatives of the Montana Stockgrowers Association, Montana Wool Growers Association, and

* These recommendations were presented formally to the Revenue Oversight Committee at the September 10, 1983 meeting as "ALTERNATIVE II". See Appendix E.

Montana Farm Bureau Federation objected to the (DOR) recommended valuation method. Their objections were that:

> . . . we do not believe that the statutes contemplate a gross income tax applied to agricultural land. If the Legislature had intended gross income or potential gross income to be the basis for agricultural taxable values, it would have been a simple matter to establish this method in the law. In addition, both alternatives assume that total gross production, or gross income, is attributable to the land. We believe that other factors of production such as labor, machinery, and management all contribute to income and must be considered when arriving at the productive capacity of the land. (Source: Mons Tiegan, Pat Underwood, Robert Gilbert letter to Leslie A. Saisbury, Dept. of Revenue, Sept. 7, 1982. Department files.)

The signators did, however, partially approve of one alternative presented by the Department, that being a capitalized net income method of valuation. The letter further stated:

> It is our opinion that alternative four, capitalization of net agricultural income, is the only acceptable method of establishing taxable values for agricultural land. This was the method used to establish the values which are presently in use and the Legislature has not acted to change or modify this approach during the past twenty years. If net agricultural income is the basis for capitalized land values and factors relating to speculative or urban influences are not made a part of the analysis, this approach is acceptable to us and we believe it is in conformity with Montana law. (Source: Tiegan, et al, letter to Saisbury, Sept. 7, 1982. Department files)

Interestingly enough, the capitalized net income method produced some of the highest values of the four alternatives. There is no debate that all categories of agricultural land would have shown significant increases in value over the current schedules under the Department's capitalized net income formula. Although approving of the method, the letter's signators rejected the income and expense data as well as the capitalization rate of 5.2%. (See Appendix D.)

January 1983 Rules Proposed - Department of Revenue

Considering the comments from the Revenue Oversight Committee* and the other interested parties, the Department proposed new schedules (in the traditional form of administrative rules) in January 1983. The proposed values for summer fallow, continuously cropped, wild (continuously cropped) hay, and grazing lands showed an increase for each category of about 90% (over the existing 1963 values.)

Revised valuations on irrigated tillable lands varied between an increase of 121.3% (for grade 8 of all rotations) to a decrease of 54% (for grade 6 of all rotations).

This proposal met a swift death. The 48th Legislature was in session at the time of the public hearings on the schedules and, in light of the negative public comments, not only precluded the Department from adopting the rules, but further prohibited th Department from implementing any other schedules bef

*See: Revenue Oversight Committee, "Minutes", September 10, 1982, Montana Legislative Council.

January 1986. (See Chapters 644 and 510, Laws of Montana, 1983.)

DETERMINATION OF PRODUCTIVE CAPACITY VALUE

As a result of the legislature's actions, public sentiment, and the rejection of its proposals, the Department created the previously mentioned Advisory Council on Agricultural Lands Valuation in the spring of 1983. Its charge was to advise the Department in the development of new valuation schedules.

In the initial stages of the Advisory Council's work, the Department presented four alternative methods of determining agricultural lands' values. Those methods were:

1. Potential Gross Income;
2. Adjusted Potential Gross Income;
3. Value Indexing; and
4. Capitalized Net Income.

Each of these is discussed briefly below, with significantly more attention being given to the capitalized net income (CNI) method. The reason for this is because agricultural organizations supported this method, the DOR's rules proposed in January 1983 were developed using this method, and the recommendation of the Advisory Council in September of 1983 supported this method.

Potential Gross Income

This method of valuation is one of the simplest methods available. Data used in value determination is readily available, value is based on production, and all data

can be obtained annually to keep values at current levels.

The detractions of this method, as noted by the Department, are that the relationships between production types and levels are not maintained, and further, that lower production levels are adversely affected.

The method requires only a few steps. First, the land type must be determined, e.g. summer fallow. Next, the productive capacity of the land must be ascertained (by either production records or by comparable operations.) Third, the market price of the commodity produced must be established. (The Department proposed a 5-year market average.) When all data is found, the commodity production level of the land per acre is multiplied by the average commodity price. The basic formula then is:

(Commodity production per acre) x (commodity price) = potential gross income per acre

The "potential gross income per acre" value would then become the assessed value for that land. Of course most operations have more than one type and production level of land and because of that, each operation's different lands must be assessed individually. Simply totaling the separate parcel values results in the assessed value of each operation's land.

Adjusted Potential Gross Income

This method has the same advantages as the Potential Gross Income method plus the added advantage of adjust-

ing values to maintain the relationships within classes and between production levels.

The single detraction from this method noted by the Department was that the values derived were the lowest of the four alternatives. The low value was considered a detraction due to the potential effects to local governments' tax bases.

The basic formula for the adjusted gross income method is:

> (Commodity production per acre) x (commodity price) x (adjustment factor) = Adjusted Potential Gross Income.

The formula would be applied for each parcel, with each parcel's resultant value totaled to obtain an assessed value for each operation's land. (See Appendix E.)

Value Indexing

This method is probably the simplest method presented, because data are available annually making updates relatively easy. The values generated by this alternative were based on the 1963 values (which were based on production.) The indexing process -- merely the application of an inflation factor -- does not determine new production values, but rather relies on the accuracy of the figures developed in the 1963 (existing) schedules.* Consequently, the indexed values are also based on production.

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* The "indexing" referred to above is actually a factor indicating an increase in land value between 1963 and 1981. The "index" factors suggested and used

continuously cropped, and wild hay lands. For grazing lands, the factor was 6.54, and for tillable irrigated lands the factor was 5.97.

The formula for this method then is:

> (1963 valuation) x (appropriate index factor) = indexed valuation.

This, of course, would have to be repeated for each parcel, the same as the other methods.

The Department warned that this method had definite weaknesses in that the 1963 values were assumed to be accurate, and that the relationships between and within classes were also be assumed to be accurate. As the Department pointed out, these assumptions are highly suspect when the values generated by the other methods are considered.

Capitalized Net Income

The capitalization of net income method (CNI) was (and is) probably the most complex method presented by the Department for determining value.

The advantages of CNI, stated by the Department, should be noted. The first advantage, i.e. that the method bases value on production, is no different than the other methods and is, in fact, a statutory requirement. The second stated advantage, i.e. being consistent with

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by the Department were taken from the Montana Crop and Livestock Reporter, "Montana Farm Real Estate: Indexes of Average Value by Land Types 1950-1981", May 15, 1981.

the method used in determining the 1963 schedules, may be more of a true advantage. Based on the assumption that there was rational thought put into the development of the current schedules, the adoption of CNI would preclude "reinventing the wheel".

The Department, however, listed several problems with the method. Those problems were:

1. It is the most difficult to update because of the availability of data.

2. It takes the most time administratively to develop.

3. While the gross income portion of this approach is easy to establish, the operating expense side is not.

4. Expense data necessary to determine average production expenses on different types and productivity levels of land is very limited and difficult to obtain. There is simply not adequate data readily available to arrive at substantive averages to apply statewide.

5. The wide variability in production costs between ownerships across the state causes major problems in determining what a typical average should be.

6. Selection of an average capitalization rate to apply statewide is very difficult since these rates vary from area to area and from crop type to crop type.

7. It is possible . . . to encounter net losses instead of net incomes. This then poses another problem; how can [values be developed] based on net income when there is no net income?

8. The variability in expense data particularly makes this approach very difficult to use in a mass appraisal

> situation. This approach would be more suitable if [each operation were individually audited.] This, however, is a virtual impossibility in a statewide mass appraisal cycle. To do this would take an excessive amount of time, expense and personnel. Department personnel are continuously involved in classifying and grading the productive capacity of all ownerships presently, and the valuation schedules are then applied uniformly statewide. (Source: "ALTERNATIVE IV', Revenue Oversight Committee "Minutes", September 10, 1982. Legislative Council and DOR files.)

Even with the limited advantages and significant disadvantages, the Department was able to develop schedules using CNI.

Data sources for this method are perhaps as important as the method itself. The Department listed its data sources as:

1. Yield data -- Montana Agricultural Statistics.

2. Price data -- Montana Agricultural Statistics and "The Annual Summary of Crop Production." (Both prepared by the Montana Crop and Livestock Reporting Service.)

3. Expense data -- "Montana-Wyoming Farm Enterprise Cost and Return Data Analysis" (prepared by the Soil Conservation Service) and miscellaneous "Farm Enterprise Cost and Return" studies (prepared by the Montana Extension Service.)

4. Additional income and expense data were acquired from the Federal Land Bank. This data was applied in determining the values on grazing land since more data was available on ranching operations than from the expense data source cited above.

The Department also used five-year averages to "smooth irregularities" in farm production and prices.

Although the formula used to calculate net income may look somewhat ominous, the process can be described fairly easily. (This is a very simplistic explanation!)

Net income for grazing and wild hay land is determined by subtracting the average operating costs of a given crop from the average output price of the crop. For summer fallow, tillable irrigated and continuously cropped land, crop rotation must be considered, requiring additional steps.

This formula determines only the net income for a "unit" of output, e.g. a bushel or an animal unit. Therefore, this net income figure must be multiplied by the average crop production, e.g. bushels per acre, to generate a net income per acre figure.

The algebraic formula for net income is shown in Figure 1. (Net income is sometimes referred to as return over variable cost or ROVC.)

Figure 1

$$NI/unit = \frac{\sum_{i=1}^{n} T_i l_i (P_i - AVC_i)}{N}$$

Where: NI/unit is the net income estimate.

l_i is the weight (average production) obtained from the conversion factor for the i^{th} crop.

P_i is the average output price

AVC_i is the average operating cost for the ith crop.

N is the number of years for a complete crop rotation (for irrigated land only.)

T_i is the proportion of total crop land in crop i for continuously cropped and fallow only (making the division by N unnecessary for other land types.)

Capitalization

The final component in the CNI formula is the capitalization rate. This rate is sometimes referred to as the "rate of return" or simply as the "cap rate". The Department initially suggested a capitalization rate of 5.2%. (Alternative IV, August 1982). By the time rules were formally proposed by the Department in January 1983, the capitalization rate had been changed to 10.5%. ("The Income Approach: A Method for Updating Agricultural Land Values", Department, Dec. 28, 1982. Department files.) The cap rate recommended by the Advisory Council on Agricultural Land Valuation in September 1983 was 14.92%. How each of the cap rates was developed is outlined below.

"Alternative IV", August 1982 - Detailed

The capitalization rate (or cap rate) used by the Department in the August 1982 alternatives was 5.2%. The principal elements of the rate were:

1. 1977-1981 weighted average Federal land Bank interest rate (9.62%); and

2. A 35-40 year average growth rate of Montana net farm income (4.25%).

On advice from Dr. Richard McConnen of the Montana State University Economics Department, those elements were included in this basic formula:

$$\text{(value)} \quad V = \frac{NI}{\frac{1+g}{r-g}} \qquad \frac{\text{(net income)}}{\text{(cap rate)}}$$

Where:

V = Land Value
g = Average rate of growth of net income (.0425)
r = Discount Rate (.0962), and
NI = Net Income

(Source: American Journal of Agricultural Economics; Dec. 1979, vol. 61, No. 5. Article by Emamuel Melichar (title not given by Department); as cited in "ALTERNATIVE IV".)

By substituting the values used by the Department, the cap rate is 5.151% (rounded to 5.2%).

(Note: The net income figures in ALTERNATIVE IV were based on the production period from 1975-1979.)

There is no question that using this formula changed the values of agricultural lands. For selected grades of each type of land the values would have changed as illustrated in Table 9.

TABLE 9

Land Type	Grade	1963 Value	ALT. IV Value	% Change
Summer fallow	1A8	$ 81.08	$202.22	149.4
	2A	23.15	13.85	(40.2)
Continuously Cropped	1A4	125.71	460.37	266.2
	14	6.41	18.50	188.6
Wild Hay	1	67.60	875.50	1195.1
	7	5.54	67.35	1115.7
Grazing	1A2	71.69	664.46	826.9
	6	0.82	14.82	1707.3
Tillable Irrigated	1A	97.26	883.31	808.2
(Medium Rotation)	8	4.55	139.47	206.5

SOURCE: 1983 Legislative Council staff estimates.

Department Rule Proposal, January 1983 - Detailed

The cap rate used by the Department in its formal rule proposal in January 1983 was 10.5%. (Note also that the production period used to find net income was 1977-1981, an update from the August 1982 period.)

In generating the cap rate of 10.5%, the Department added one element to the cap rate formula. In addition to the 5-year average Federal Land Bank interest rate (9.62%) and the average net income change (+4.25%), the Department included an effective tax rate element. This was done because the Department had found that

taxes were not typically handled as expenses (as applied in the net income component in Alternative IV); therefore the tax rate was included in the cap rate.

The effective tax rate element was calculated by the Department using two factors, one statutorily defined, the other estimated. The statutory factor was the 30% taxable rate applied to agricultural land (§15-6-133, MCA.) The estimated factor was the average rural mill levy. This factor was estimated at 175 mills. To determine the effective tax rate, the taxable rate was multiplied by the average rural mill levy. The result, illustrated below, was 5.3%.

taxable rate (0.30) x average rural mill levy (.175) = effective tax rate (5.25%)

This effective tax rate (5.3%) was then added to the previously calculated cap rate (5.2%) to arrive at the new cap rate, 10.5%.

This change in the cap rate resulted in approximate reductions in value from the August 1982 proposal

TABLE 10

Land Type	Grade	1963 Value	Jan. 83 Value	% Change
Summer fallow	1A8	$ 81.08	$103.93	28.2
	2A	23.15	8.80	(62.0)
Continuously Cropped	1A4	125.71	246.02	95.7
	14	6.41	12.77	99.2
Wild Hay	1	67.60	294.30	335.4
	7	5.54	45.64	723.8
Grazing	1A2	71.69	119.84	67.2
	6	0.82	2.67	225.6
Tillable Irrigated	1A	97.26	416.87	328.6
(Medium Rotation)	8	4.55	65.82	1346.6

SOURCE: 1983 Legislative Council staff estimates.

(Alternative IV) by about 50%. However, even with the new 10.5% cap rate the newly proposed values were significantly different than the existing values. This is illustrated in Table 10.

Option I2C - Advisory Council Recommendation

The recommendation made by the Advisory Council on Agricultural Land Valuation on September 28, 1983 was an option prepared by the Department after the July 25 meeting. That option was labelled "I2C" in a packet of information given to the Advisory Council members at their September 28 meeting. (The information is in Department files.) It was a variation of the I2 option discussed at the July 25, 1983 Advisory Council meeting. (See Appendix D for a more complete discussion of the Advisory Council's efforts.)

This option was somewhat of a hybrid of two valuation methods, indexing and capitalized net income. The hybrid characteristic was the result of recommendations suggested to the Department by the Advisory Council. Those recommendations, in part, were:

1. That capitalized net income based on production should be used as the principal method of establishing value.

2. That however the existing schedules were revised, an effort should be made to maintain the (existing) relationships within and between classes of agricultural land. This required some method of indexing.

2.a. That the indexing factor should be based on the average value and production level of summer fallow land.

3. That the capitalization rate used for determining agricultural land values should be the effective rural tax rate (5.3%) plus the 5-year average Federal Land Bank interest rate (9.62%), or 14.92%.

4. That water cost classes for tillable irrigated land should be adjusted to reflect current water costs.

5. That, to meet the requirements of House Bill 637 (Ch. 644, Laws of 1983), irrigated land values should not be less than equivalent dry land (summer fallow) values.

This method is similar to the "Alternative IV" and the January rule proposal in that it is based on both capitalized net income and indexing.*

(NOTE: Appendix F, "Option I2C", may be referred to for a fuller understanding of the following material.)

The net income base of I2C was derived from the "Adjusted ROVC/acre" values used in the January 1983 rule proposal and a weighted average calculation resulting

*The indexing used in I2C, and in Alternative IV and the January proposal as well, should not be confused with the indexing method described earlier in this discussion. That was more or less an inflation index while this is an index maintaining the relationships of values within and between the various agricultural classes.

in the $1.3951 ROVC/acre value. The "weighting" factor was the number of acres of summer fallow land in each of the summer fallow grades multiplied by the adjusted ROVC/acre value determined by the Department for the January 1983 rule proposal.

The "index" used, labelled as "Factor A/B" in the I2C option, was developed using the relationship between

grades in the existing schedules, and the (then) newly calculated weighted average value for summer fallow land, $23.11.

For example, within the summer fallow class, "Factor A/B" for grade 1A8 was 3.5084. This meant that the existing schedule's value of grade F1A8 ($81.08) was 3.5084 times greater than the I2C weighted average value of summer fallow land ($23.11).

An example between classes can be illustrated similarly. The "Factor A/B" for grade 1A of continuously cropped is 3.9217. This means that the existing schedule's value of grade CC1A ($90.63) was 3.9217 times greater than the I2C weighted average value of summer fallow land ($23.11).

A combination of the ROVC/acre value and the Factor A/B value resulted in an adjusted ROVC/acre value. That adjusted ROVC/acre value was then capitalized to arrive at the final assessed value.

Capitalization Rate for I2C

The cap rate used in Option I2C was 14.92%. This cap rate used some elements of the other methods' cap

rates, but excluded one common element, the average change in net farm income.

More specifically, the cap rate for I2C was comprised of the 5-year average Federal Land Bank interest rate and the effective rural tax rate. The formula is illustrated below.

(5-year avg. FLB interest rate, 9.62%) +
(effective rural tax rate, 5.3%) =
I2C cap rate (14.92%)

The effects resulting from the weighted average index and the revised capitalization rate had a substantial affect on the I2C land values. Those values are shown in Table 11.

TABLE 11

COMPARISON OF 1963 and I2C VALUES

Land Type	Grade	1963 Value	I2C Value	% Change
Summer fallow	1A8	$ 81.08	$ 32.81	(59.5)
	2A	23.15	9.37	(59.5)
Continuously Cropped	1A4	125.71	50.86	(59.5)
	14	6.41	2.59	(59.5)
Wild Hay	1	67.60	27.35	(59.5)
	7	5.54	2.24	(59.5)
Grazing	1A2	71.69	29.01	(59.5)
	6	0.82	0.33	(59.5)
Tillable Irrigated	1A	97.26	39.35	(59.5)
(Medium Rotation)	8	4.55	1.84	(59.5)

SOURCE: 1983 Legislative Council staff estimates.

CONCLUSIONS AND RECOMMENDATION

If any conclusion can be drawn from the preceding discussion, it is that devising new agricultural land valuation schedules is a formidable task. This is evidenced by a lack of data, and by the indeterminate, ever changing state of "agriculture".

The Department of Revenue's personnel developed more than a dozen alternatives for the Advisory Council revision efforts. The initial recommendation made by the Department, the Adjusted Gross Income method, received very little, if any, support from either agricultural groups or the Revenue Oversight Committee. Almost a year after the Department first recommended the adjusted gross income method, it was again flatly rejected by the Advisory Council on Agricultural Land Valuation.

It is probably coincidence that the most difficult method presented, one which received only moderate support from the Department, was the only method acceptable to the Advisory Council. That method, of course, was capitalized net income.

By the time the Subcommittee had studied the alternatives and given the issue substantial consideration -- December 1983 -- the Advisory Council had already recommended to the Department that the schedules resulting from "Option I2C" be adopted as the values for the appraisal cycle beginning January 1, 1986.

While the Advisory Council's recommendation had some support from several Subcommittee members, it did not have enough to become the recommendation of the Subcom-

mittee. After a joint meeting between the Subcommittee and the Advisory Council in January of 1983, a recommendation was adopted by the Subcommittee to be presented the Revenue Oversight Committee. That recommendation was:

> That the values currently applied to agricultural lands be adopted as the values to be used for the appraisal cycle beginning January 1, 1986, except that the values applied to irrigated lands be adjusted so that such land's values are not below the value such land would have id it were not irrigated.

That recommendation was developed into draft legislation (LC 0002) for the Revenue Oversight Committee in March of 1984, reviewed by that Committee at meetings in June, August, and September of 1984, and finally adopted as a recommendation to the 49th Legislature in November 1984.

END NOTES

[1]Montana, Constitution, Art. XII, secs. 15, 16 (1889).

[2]Montana, State Board of Equalization, 1st Annual Report, 1890, pp. 1-7.

[3]Ibid., pp. 23-33.

[4]"[The] Board appointed A. P. Brown as its clerk, trusting to the high sense of honor of the next Legislature to reimburse him for his valuable services rendered the State in the performance of the duties imposed upon him by the Board." (1st Annual Report, p. 4.) The Second Legislature apparently had the "high sense of honor", and passed legislation reimbursing Mr. Brown in the sum of "one thousand sixty six and 2/3 dollars". (Laws of Montana, 1891, p. 151)

[5]"An Act Concerning Revenue"; Division One, Laws of Montana, 1891, pp. 73-128.

[6]Ibid., Sec. 38, p. 87.

[7]Montana, State Board of Equalization, 1st Annual Report, 1890, p. 27.

[8]Montana State Board of Equalization, Second and Third Annual Reports, Rule XVI and Rule XVII, Dec. 1, 1891-1892, p. 18.

[9]Ibid.

[10]Montana, Constitution, Art. XII, sec. 1, (1889).

[11]Ibid., Art. XII, sec. 11.

[12]"An Act Concerning Revenue"; Division One, Laws of Montana, 1981, pp. 74-75.

[13]Ibid., sec. 58, pp. 95-96.

[14]Ibid., sec. 60, p. 96.

[15]Ibid., sec. 72(9), p. 101. Note: It is also interesting that the state Board was the appeals board for railroads and utilities, and such appeals were mainly on valuations that the Board itself had established. This was the procedure for more than 80 years, until after the adoption of the new Constitution in 1972.

[16]Montana State Board of Equalization, Second and Third Annual Reports, Rule XVI and Rule XVII, Dec. 1, 1891, pp. 112-114.

[17]Montana State Board of Equalization, Sixth Annual Report, Nov. 30, 1895, p. 5.

[18]Teresa Olcott Cohea, Montana's Property Taxes: Assessment and Classification, Montana Legislative Council, Dec. 1976, p. 8.

[19]The decision read in part:

> "Look then to the provisions of the constitution and the statute, we are clearly of the opinion that the power to fix and determine the valuation of taxable property is lodged by them in the assessor and the board of county commissioners of the several counties of the state, and that when they have under the law performed this duty and exercised this power, that the sum of the valuations of the several counties so by them found must be taken as the aggregate valuation of all the property in the state, and is conclusive and final as against the state board of equalization. The state board may, for the purpose of adjusting and equalizing, increase the aggregate valuation of one county, and decrease the aggregate valuation of another, but they have no power to increase the sum of all the valuations of the several counties of the state. The aggregate valuation has been found for them, and fixed by the authority and in the mode prescribed by law. This view is not only sanctioned by the force of the general provisions of the statute considered as a whole, but also by the phraseology of the sections under consideration. The board is to adjust and equalize the valuation. This term valuation here imports values already estimated and fixed and must be referred for the the measure of its force and meaning to the mode prescribed by law for estimating and fixing valuations. The aggregate material with which the board can deal is thus limited; they may adjust and equalize it among the several counties, but they cannot add to its volume." (18 Mont. 473)

[20]Montana, State Board of Equalization, Ninth Annual Report, 1898, Nov. 30, 1898, p. 7.

[21]Chapter 47, Laws of Montana, 1915, pp. 70-71.

[22]Chapter 73, Laws of Montana, 1917, pp. 100-102.

[23]Montana. Tax and License Commission, Report to the State Board of Equalization 1917-1918, pp. 10-11.

[24]Ibid., p. 27.

[25]Cohea, Teresa Olcott, Montana's Property Taxes: Assessment and Classification, Montana Legislative Council, Dec. 1976, pp. 7-10.

[26]Chapter 51, Laws of Montana, 1919.

[27]Chapter 239, sec. 3, Laws of Montana, 1921, p. 534.

[28]Chapter 239, Laws of Montana, 1921, pp. 533-536. NOTE: The recodification of 1921 designated the 1921 law as sections 2024 through 2031, Revised Codes of Montana, 1921. The recodification in 1935 retained the same section designations. The 1947 recodification re-enacted the same language, but designated the sections as 84-431 through 84-437.

[29]Chapter 198, Laws of Montana, 1955, pp. 437-440.

[30]This definition was first established in the "Act Concerning Revenue", sec. 4, Laws of Montana, 1891, p. 74.

[31]Chapter 89, Laws of Montana, 1919, p. 113.

[32]Chapter 191, Laws of Montana, 1957, pp. 403-405.

[33]Montana, State Board of Equalization "Directive", November 14, 1963. (On file, Montana Dept. of Revenue.)

[34]Chapter 294, Laws of Montana, 1975, pp. 571-572.

[35]These alternatives were given to several interested parties during the summer and early fall of 1982. The alternatives were also formally presented to the legislature's Revenue Oversight Committee on September 10, 1982 and are contained in the "Minutes" of that meeting. See also: Leslie A. Saisbury letter, August 16, 1982, Department of Revenue Property Assessment Division files, Helena, Montana; and Mons Tiegan, et al, letter to Leslie A. Saisbury, September 7, 1982,

Department of Revenue Property Assessment Division files, Helena, MT.

[36]Ibid., Mons Tiegan, et al, letter to Leslie A. Saisbury, September 7, 1982.

[37]For a general recount of the discussion, see (Montana) Revenue Oversight Committee, "Minutes" of September 10, 1982 meeting, Helena, Montana. Apparently the discussion was either ambiguous or heated due to Representative (Ken) Nordtvedt's remarks that the valuation of agricultural land "is not a rational process -- it's a political argument that will be settled based on calculating what agriculture is paying now and a new system that will produce about the same revenue."

[38]1983 MAR Issue No. 2, January 27, 1983, pp. 58-64.

[39]Chapter 510, Laws of Montana, 1983, p. 1124.

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2. Laws of Montana 1891. "An Act Concerning Revenue", Division One.

3. Laws Of Montana 1890 -- . Helena, MT.

4. Mons Tiegan, et al., letter to Leslie A. Saisbury, September 7, 1982. Helena, MT: Department of Revenue, Property Assessment Division files.

5. Montana Constitution, Art. XII, secs. 1, 15, 16 (1889)

6. Montana. 1983 Montana Administrative Rules (MAR) Issue No. 2, January 27, 1983.

7. Montana. Revenue Oversight Committee. "Minutes of September 10, 1982 Meeting". Helena, MT: Legislative Council; on file, 1982.

8. Montana. State Board of Equalization. "Directive", November 14, 1963. Helena, MT: Department of Revenue files.

9. Montana. Tax and License Commission. Report to the State Board of Equalization 1917-1918. Helena, Montana.

10. State ex rel. Wallace v. State Board of Equalization, 18 Montana. 473 (1896).

APPENDIX A

CLASSES, GRADES, AND VALUES FOR MONTANA AGRICULTURAL LANDS AS APPROVED BY THE STATE DEPARTMENT OF REVENUE

NON-IRRIGATED FARM LAND (F)

Grade	Bu. Wheat Per Acre On Summer Fallow	Assessed Value Per Acre
1A8	40 & over	81.08
1A7	38 - 39	74.51
1A6	36 - 37	67.94
1A5	34 - 35	61.37
1A4	32 - 33	54.80
1A3	30 - 31	48.60
1A2	28 - 29	42.79
1A1	26 - 27	37.31
1A	24 - 25	32.22
1B	22 - 23	27.50
2A	20 - 21	23.15
2B	18 - 19	19.17
2C	16 - 17	15.56
3A	14 - 15	12.31
3B	12 - 13	9.44
4A	10 - 11	6.94
4B	8 - 9	4.81
5	Under 8	3.06

WILD HAY LAND (WH)

Grade	Tons of Hay Per Acre	Assessed Value Per Acre
1	3.0 & over	67.60
2	2.5 - 2.9	53.03
3	2.0 - 2.4	41.38
4	1.5 - 1.9	29.43
5	1.0 - 1.4	19.38
6	.5 - .9	10.05
7	Less than .5	5.54

GRAZING LAND (G)

Grade	Acres Per 1000# Steer 10 Mos.	Assessed Value Per Acre
1A2	Under 3	71.69
1A1	3 - 5	44.18
1A+	5.1 - 5.9	31.27
1A	6 - 10	20.51
1B	11 - 18	10.53
2A	19 - 21	7.17
2B	22 - 27	5.42
3	28 - 37	3.72
4	38 - 55	2.52
5	56 - 99	1.47
6	100 or over	.82

NON-IRRIGATED CONTINUOUSLY CROPPED FARM LAND (CC)

Grade	Bu. of Wheat Per Acre Each Year	Assessed Value Per Acre
1A4	44 & over	125.71
1A3	42 - 43	116.94
1A2	40 - 41	108.17
1A1	38 - 39	99.40
1A	36 - 37	90.63
1	34 - 35	81.86
2	32 - 33	73.09
3	30 - 31	64.81
4	28 - 29	57.05
5	26 - 27	49.75
6	24 - 25	42.96
7	22 - 23	36.67
8	20 - 21	30.87
9	18 - 19	25.56
10	16 - 17	20.75
11	14 - 15	16.41
12	12 - 13	12.59
13	10 - 11	9.25
14	Less than 10	6.41

TILLABLE IRRIGATED LANDS (I)

CLASS 1 (Maximum Rotation) Assessed Value Per Acre by Water Cost Classes

Grade	Tons Alfalfa Per Acre	Under $1.50	$1.50 2.49	$2.50 3.49	$3.50 4.49	$4.50 5.49	$5.50 6.49	$6.50 7.49	$7.50 & Over
1A	4.5+	110.40	103.74	97.07	90.40	83.74	77.07	70.40	63.74
1B	4.0-4.4	94.70	88.98	83.26	77.55	71.83	66.11	60.39	54.68
2	3.5-3.9	78.70	73.96	69.20	64.45	59.70	54.94	50.19	45.44
3	3.0-3.4	63.70	59.85	56.00	52.16	48.31	44.47	40.62	36.78
4	2.5-2.9	48.53	45.60	42.67	39.74	36.81	33.88	30.95	28.02
5	2.0-2.4	31.92	30.00	28.07	26.14	24.21	22.29	20.36	18.43
6	1.5-1.9	19.86	18.67	17.47	16.27	15.07	13.87	12.67	11.47
7	1.0-1.4	11.37	10.69	10.00	9.31	8.63	7.94	7.25	6.57
8	-1.0	4.55	4.28	4.00	3.72	3.45	3.18	2.90	2.63

CLASS 2 (Medium Rotation) Assessed Value Per Acre by Water Cost Classes

Grade	Tons Alfalfa Per Acre	Under $1.50	$1.50 2.49	$2.50 3.49	$3.50 4.49	$4.50 5.49	$5.50 6.49	$6.50 7.49	$7.50 & Over
1A	4.5+	97.26	90.60	83.93	77.27	70.60	63.94	57.27	50.60
1B	4.0-4.4	81.72	76.12	70.52	64.92	59.32	53.72	48.12	42.52
2	3.5-3.9	67.27	62.66	58.05	53.44	48.83	44.22	39.61	35.00
3	3.0-3.4	53.90	50.21	46.51	42.82	39.12	35.43	31.73	28.04
4	2.5-2.9	41.60	38.76	35.90	33.05	30.20	27.35	24.49	21.65
5	2.0-2.4	30.39	28.31	26.22	24.14	22.06	19.98	17.89	15.81
6	1.5-1.9	19.86	18.67	17.47	16.27	15.07	13.87	12.67	11.47
7	1.0-1.4	11.37	10.69	10.00	9.31	8.63	7.94	7.25	6.57
8	-1.0	4.55	4.28	4.00	3.72	3.45	3.18	2.90	2.63

CLASS 3 (Minimum Rotation) Assessed Value Per Acre by Water Cost Classes

Grade	Tons Alfalfa Per Acre	Under $1.50	$1.50 2.49	$2.50 3.49	$3.50 4.49	$4.50 5.49	$5.50 6.49	$6.50 7.49	$7.50 & Over
1A	4.5+	86.26	79.60	72.93	66.27	59.60	52.94	46.27	39.60
1B	4.0-4.4	73.84	68.14	62.43	56.72	51.02	45.31	39.60	33.90
2	3.5-3.9	62.01	57.22	52.43	47.64	42.84	38.05	33.26	28.47
3	3.0-3.4	50.79	46.86	42.94	39.02	35.09	31.16	27.24	23.32
4	2.5-2.9	40.15	37.05	33.95	30.85	27.74	24.64	21.54	18.43
5	2.0-2.4	30.11	27.78	25.46	23.13	20.80	18.48	16.15	13.82
6	1.5-1.9	19.86	18.67	17.47	16.27	15.07	13.87	12.67	11.47
7	1.0-1.4	11.37	10.69	10.00	9.31	8.63	7.94	7.25	6.57
8	-1.0	4.55	4.28	4.00	3.72	3.45	3.18	2.90	2.63

APPENDIX B

This appendix contains two documents relating to the September 28, 1983 recommendation of the Advisory Council on Agricultural Lands Valuation.

The first document, loosely titled "Tentative Proposal -- Updating Agricultural Land Values", is a description of how the other document, "I2C", was developed. The "Tentative Proposal" is not dated, nor is the author listed. Because it refers to the recommendation made by the Advisory Council, it had to have been written after September 28, 1983. A check with the Department of Revenue confirmed that it was written by Leslie A. Saisbury, Chief of the Agriculture and Timber Lands Bureau.

The second document, I2C, is the recommendation made by the Advisory Council on September 28, 1983. If it had been adopted, the tables contained therein would have replaced the tables currently used to assess agricultural lands. The current schedules are now found as sections 42.20.141 through 42.20.146, ARM. They are also contained in Appendix A.

Tentative Proposal - Updating Agricultural Land Values

The attached proposal, I2C, represents the recommendation of the Advisory Council on Agricultural Land Valuation to the Department of Revenue on new valuation schedules. These schedules would not be implemented until January 1, 1986.

It is necessary to explain the mechanics of developing the attached schedules.

1. The values in the following schedules are developed by using the present relationships among all classes and productive grades of agricultural land. To accomplish this, a factor representing the current relationships is determined. But, before calculating the factors a specific starting point or indexing base must be determined.

   The index base in this proposal is the weighted average assessed value of nonirrigated summerfallow land in Montana. This weighted average shows that the average assessed value of this class of land is approximately $23.11 per acre.

   Nonirrigated summerfallow land was selected for the index base for the following reasons:

   a) The income and expense data on this type of property is the most accessible in published form, and the Department of Revenue feels this data to be the most reliable of the data acquired throughout this valuation study. More published data is available on an annual basis with this type of land than any other use class.

   b) This class of land represents over 20% of the taxable agricultural land in the state.

   c) Summerfallow lands are found in every county of the state. This supports using good input data regarding this type of land as a basis for determining values on other agricultural use classes.

2. The index factors shown in the third column of the attached schedules is found by dividing the present weighted average value ($23.11) into the current per acre value of each productive grade in each class of agricultural land.
   Example: Index Factor for F1A8 Land equals

$$\frac{\text{(Present Value F1A8)}}{\text{(Present Weighted Average Value Summer Fallow)}} = \frac{\$81.08}{\$23.11} = 3.5084$$

   The factors for every other productive grade in each class are found in the same manner.

3. These factors are then multiplied by $1.3951, the return over variable cost (ROVC) of the same production level which the

$23.11 represents. This gives an adjusted ROVC per acre at each level of production. This adjusted ROVC per acre will maintain the same relationships between productive grades as the present schedules except all schedules are "shifted" to reflect current economics of agriculture. The ($1.3951) becomes the basis for calculating the proposed values of all agricultural uses on the attached schedules. The income and expense data used in determining this ROVC per acre figure is available from the Department of Revenue.

4. This adjusted ROVC/acre is then capitalized (divided) by the capitalization rate of 14.92%. This rate is composed of 2 elements, a discount rate and an effective tax rate. The discount rate of 9.62% is a weighted average of the 1977 - 1981 Federal Land Bank mortgage interest rates. The effective tax rate of 5.3% is determined by multiplying the statutory taxable percentage times the average rural mill levy as follows:

Taxable %		Approx. Rural Mill Levy		Effective Tax Rate
30%	X	.175	=	5.3%

The overall rate is the result of adding the two components together or 14.92%. The column on the attached schedules headed Cap. 14.92% is the capitalized net income figure and the proposed new values for agricultural land.

Capitalization is accomplished by the following formula:

$$V = \frac{I}{R}, \text{ Where}$$

V = Land Value we are trying to determine
I = Annual net income or return over variable cost
R = Capitalization rate

5. The column titled present Assessed Value is the value currently used for valuing agricultural land.

6. The final column headed Percent Change In Value shows the change in percent from the current values to the proposed. The percent changes indicated on the following schedules show a drop in value of 59.5% on all use classes except irrigated. Slight differences are due to rounding.

This method was used to develop values for all lands, except irrigated. Irrigated land values, while using the same basic method, required additional adjustments.

A separate explanation regarding the irrigated values is needed since certain considerations were necessary in developing these values which were not needed with the other use classes.

1. The columns starting on the left through the one titled Cap. 14.92% are the same as above. The index factors for irrigated land are found as discussed previously for the other use classes of agricultural land.

I2C

This option is based on I2 as well. The difference is in the method of establishing the index base. In this instance, the base was determined by developing a weighted average of all grades of nonirrigated summerfallow land. The index factors for each grade are then multiplied against the base value to give an adjusted ROVC/acre. This figure is then capitalized by 14.92% to give a proposed value per acre.

The weighted average places the greatest credence for an indexing point where the greatest number of summerfallow acres falls. This fact may make this a more desirable way of indexing since,

1. The income and expense data we have used in developing all the schedules thus far is based on averages for Montana, and

2. This type of index base places the greatest credence where the actual average lands in Montana would fall.

The irrigated land is treated in the same manner as in I2A. Water cost classes are shown to the point where all irrigated values are replaced by summerfallow values.

I2C

Non-Irrigated Land (Summerfallow)

Grade	ROVC/Acre	Factor A/B	Adjusted ROVC/Acre	Cap 14.92%		Present Assessed Value	Percent Change In Value
F1A8	$1.3951	3.5084	4.8946	32.81		$81.08	(59.5)
1A7	1.3951	3.2241	4.4979	30.15		74.51	(59.5)
1A6	1.3951	2.9399	4.1015	27.49		67.94	(59.5)
1A5	1.3951	2.6556	3.7048	24.83		61.37	(59.5)
1A4	1.3951	2.3713	3.3082	22.17		54.80	(59.5)
1A3	1.3951	2.1030	2.9339	19.66		48.60	(59.5)
1A2	1.3951	1.8516	2.5832	17.31		42.79	(59.5)
1A1	1.3951	1.6145	2.2524	15.10		37.31	(59.5)
1A	1.3951	1.3942	1.9450	13.04		32.22	(59.5)
1B	1.3951	1.1900	1.6602	11.13		27.50	(59.5)
* 2A	1.3951	1.0017	1.3975	9.37		23.15	(59.5)
2B	1.3951	1.0000 .8295	1.1572	7.76	23.11	19.17	(59.5)
2C	1.3951	.6733	0.9393	6.30		15.56	(59.5)
3A	1.3951	.5327	0.7432	4.98		12.31	(59.5)
3B	1.3951	.4085	0.5699	3.82		9.44	(59.5)
4A	1.3951	.3003	0.4189	2.81		6.94	(59.5)
4B	1.3951	.2081	0.2903	1.95		4.81	(59.5)
5	1.3951	.1324	0.1847	1.24		3.06	(59.5)

A = Existing Value Each Grade Other Than Weighted Average
B = Existing Value Weighted Average = $23.11
Factor = Percent Present Values are of Weighted Average Value in decimal form

Averaging the proposed ROVC per acre by weighting all grades of nonirrigated summerfallow land according to acres, and using this weighted average ROVC per acre to base all values on.

All other classes and grades are valued by determining an index (factor) from existing value schedules and applying that factor to the weighted average value shown above to determine the value of that grade and class of land.

This type of indexing where using one nonirrigated value to index all other values by will leave the 60% reduction on irrigated lands automatically.

NON-IRRIGATED CONTINUOUSLY CROPPED

Grade	ROVC/Acre	Factor A/B	Adjusted ROVC/Acre	Cap 14.92%	Present Assessed Value	Percent Change In Value
CC1A4	$1.3951	5.4396	7.5888	50.86	$125.71	(59.5)
1A3	$1.3951	5.0601	7.0593	47.31	116.94	(59.5)
1A2	1.3951	4.6807	6.5300	43.77	108.17	(59.5)
1A1	1.3951	4.3012	6.0006	40.22	99.40	(59.5)
1A	1.3951	3.9217	5.4712	36.67	90.63	(59.5)
1	1.3951	3.5422	4.9417	33.12	81.86	(59.5)
2	1.3951	3.1627	4.4123	29.57	73.09	(59.5)
3	1.3951	2.8044	3.9124	26.22	64.81	(59.5)
4	1.3951	2.4686	3.4439	23.08	57.05	(59.5)
5	1.3951	2.1527	3.0032	20.13	49.75	(59.5)
6	1.3951	1.8589	2.5934	17.38	42.96	(59.5)
7	1.3951	1.5868	2.2137	14.84	36.67	(59.5)
8	1.3951	1.3358	1.8636	12.49	30.87	(59.5)
9	1.3951	1.1060	1.5430	10.34	25.56	(59.5)
10	1.3951	.8979	1.2527	8.40	20.75	(59.5)
11	1.3951	.7101	0.9907	6.64	16.41	(59.5)
12	1.3951	.5448	0.7601	5.09	12.59	(59.5)
13	1.3951	.4003	0.5585	3.74	9.25	(59.5)
14	1.3951	.2774	0.3870	2.59	6.41	(59.5)

CONTINUOUSLY CROPPED HAY

Grade	ROVC/Acre	Factor A/B	Adjusted ROVC/Acre	Cap 14.92%	Present Assessed Value	Percent Change In Value
WH1	1.3951	2.9251	4.0808	27.35	$67.60	(59.5)
2	1.3951	2.2947	3.2013	21.46	53.03	(59.5)
3	1.3951	1.7906	2.4981	16.74	41.38	(59.5)
4	1.3951	1.2735	1.7767	11.91	29.43	(59.5)
5	1.3951	.8386	1.1699	7.84	19.38	(59.5)
6	1.3951	.4349	0.6067	4.07	10.05	(59.5)
7	1.3951	.2397	0.3344	2.24	5.54	(59.5)

12C

GRAZING LAND

Grade	ROVC/Acre	Factor A/B	Adjusted ROVC/Acre	Cap 14.92%	Present Assessed Value	Percent Change In Value
G1A2	$1.3951	3.1021	4.3277	29.01	$71.69	(59.5)
1A1	1.3951	1.9117	2.6670	17.88	44.18	(59.5)
1A+	1.3951	1.3531	1.8877	12.65	31.27	(59.5)
1A	1.3951	.8875	1.2382	8.30	20.51	(59.5)
1B	1.3951	.4556	0.6356	4.26	10.53	(59.5)
2A	1.3951	.3103	0.4329	2.90	7.17	(59.5)
2B	1.3951	.2345	0.3272	2.19	5.42	(59.5)
3	1.3951	.1610	0.2246	1.51	3.72	(59.5)
4	1.3951	.1090	0.1521	1.02	2.52	(59.6)
5	1.3951	.0636	0.0887	0.59	1.47	(59.5)
6	1.3951	.0355	0.0495	0.33	.82	(59.5)

2. HB 687 specifies that water costs shall be considered in valuing irrigated lands. In order that current water costs can be considered, $5.00 increments are included in the proposed schedules.

3. The values at each level of production within each water cost class are determined by the formula below each schedule. The % Change column shows the difference between the proposed schedules and the current water cost schedules. It must be pointed out that this % change representation does not necessarily provide a realistic picture of what would happen to irrigated lands since acres found in each current water cost class will not automatically fall into the proposed water cost class compared here. For example, irrigated land which is presently in the $7.50 and over water cost class may fall into any one of the proposed water cost classes depending on actual current water charges.

4. The fluctuation in the % Change column from the 59.5% drop found throughout the other agricultural use schedules is due to the calculations asterisked at the bottom of the irrigated schedules. Water cost classes reflecting $5 increments rather than the $1 increments found in the present schedules were necessary so that irrigated lands can be more correctly categorized according to actual water application charges. If the present schedules had been factored in the same manner as the other agricultural use schedules, the same 59.5% drop could have been projected on irrigated lands. However, such a projection would not provide for a change in the water cost increments. The DOR would not be able to correctly categorize irrigated lands by varying water application costs. In order that these lands may be properly categorized, the water costs classes are expanded to cover $5 increments. The midpoint of each $5 category is capitalized and subtracted as an individual expense from the already determined capitalized ROVC figure. The multiplication of Capitalized ROVC by 2.5 is explained in Item 6 below.

5. HB 637 also states that irrigated values shall not fall below the value that land would have if not irrigated. Nonirrigated summerfallow values are inserted (below the lines on the irrigated schedules) where the calculated values would be lower for irrigated land. The conversion of crop production comparing irrigated production with summerfallow production is made from soil survey data.

6. Finally, the use of factors derived from the existing schedules provides continuance of the 40% factor applied to irrigated lands. To eliminate this 40% factor, the capitalized ROVC is multiplied by 2.5 as shown in the formula below the irrigated value tables. This eliminates this factor and puts the proposed irrigated values on an equal footing with the other agricultural use classes.

CDC - EXCLUDING 40% - [illegible] ROTATION

WATER COST CLASSES

Grade	Average ROVC/ Acre	Factor A/B	Adjusted ROVC/Acre	Cap 14.92%	* Up to $5.00	Present Under $1.50 Value	% Change From Present to Proposed	* $5.00 to $9.99	Present $1.50 to $2.49 Value	% Change From Present to Proposed	* $10.00 to $14.99	Present $2.50 to $3.49 Value	% Change From Present to Proposed	* $15.00 & Over	Present $3.50 to $4.49 Value	% Change From Present to Proposed
1A	$1.3951	4.7772	56.6647	$44.67	$94.91	$110.40	(14.0)	$61.40	$103.74	(40.8)	$27.89	$97.07	(71.3)	$11.13	$90.40	(87.7)
1B		4.0978	5.7168	38.32	79.04	94.70	(16.5)	45.53	88.98	(48.8)	12.02	83.26	(85.6)	9.37	77.55	(87.9)
2		3.4055	4.7510	31.84	62.84	78.70	(20.2)	29.33	73.96	(60.3)	7.76	69.70	(88.8)	7.76	64.45	(88.0)
3		2.7564	3.8455	25.77	47.66	63.70	(25.2)	14.15	59.85	(76.4)	6.30	56.00	(88.7)	6.30	52.16	(87.9)
4		2.1000	2.9297	19.64	32.34	48.53	(33.4)	4.98	45.60	(89.1)	4.98	42.67	(88.3)	4.98	39.74	(87.5)
5		1.3812	1.9269	17.91	15.51	31.92	(51.4)	3.82	30.00	(87.3)	3.82	28.07	(86.4)	3.82	26.14	(85.4)
6		.8594	1.1989	8.04	3.34	19.86	(83.2)	1.95	18.67	(89.6)	1.95	17.47	(88.8)	1.95	16.27	(88.0)
7		.4920	.6864	4.60	1.24	11.37	(89.1)	1.24	10.69	(88.4)	1.24	10.00	(87.6)	1.24	9.31	(86.7)
8		.1969	.2747	1.84	1.24	4.55	(72.7)	1.24	4.28	(71.0)	1.24	4.00	(69.0)	1.24	3.72	(66.7)
(MEDIUM ROTATION)																
1A	$1.3951	4.2086	$5.8714	$39.35	$81.61	$97.26	(16.1)	$48.10	$90.60	(46.9)	$14.59	$83.93	(82.6)	$11.13	$77.27	(85.6)
1B		3.5361	4.9332	33.06	65.89	81.72	(19.4)	32.38	76.12	(57.5)	9.37	70.52	(86.7)	9.37	64.92	(85.6)
2		2.9109	4.0610	27.22	51.29	67.27	(23.8)	17.78	62.66	(71.6)	7.76	58.05	(86.6)	7.76	53.44	(85.5)
3		2.3323	3.2538	21.81	37.76	53.90	(29.9)	6.30	50.21	(87.5)	6.30	46.51	(86.5)	6.30	42.82	(85.3)
4		1.8001	2.5113	16.83	25.31	41.60	(39.2)	4.98	38.76	(87.2)	4.98	35.90	(86.1)	4.98	33.05	(84.9)
5		1.3150	1.8346	12.30	13.99	30.39	(54.0)	3.82	28.31	(86.5)	3.82	26.22	(85.4)	3.82	24.14	(84.2)
6		.8594	1.1989	8.04	3.34	19.86	(83.2)	1.95	18.67	(89.6)	1.95	17.47	(88.8)	1.95	16.27	(88.0)
7		.4920	.6864	4.60	1.24	11.37	(89.1)	1.24	10.69	(88.4)	1.24	10.00	(87.6)	1.24	9.31	(86.7)
8		.1969	.2747	1.84	1.24	4.55	(72.7)	1.24	4.28	(71.0)	1.24	4.00	(69.0)	1.24	3.72	(66.7)
(MINIMUM ROTATION)																
1A	$1.3951	3.7326	$5.2073	$34.90	$70.49	$86.26	(18.3)	$36.98	$79.60	(53.5)	$11.13	$72.93	(84.7)			
1B		3.1952	4.4576	29.88	57.94	73.84	(21.5)	24.43	68.14	(64.1)	9.37	62.43	(85.0)			
2		2.6833	3.7435	25.09	45.96	62.01	(25.9)	12.45	57.22	(78.2)	7.76	52.43	(85.2)			
3		2.1977	3.0660	20.55	34.61	50.79	(31.9)	6.30	46.86	(86.6)	6.30	42.94	(85.3)			
4		1.7373	2.4237	16.24	23.84	40.15	(40.6)	4.98	37.05	(86.6)	4.98	33.95	(85.3)			
5		1.3029	1.8177	12.18	13.69	30.11	(54.5)	3.82	27.78	(86.2)	3.82	25.46	(85.0)			
6		.8594	1.1989	8.04	3.34	19.86	(83.2)	1.95	18.67	(89.6)	1.95	17.47	(88.8)			
7		.4920	.6864	4.60	1.24	11.37	(89.1)	1.24	10.69	(88.4)	1.24	10.00	(87.6)			
8		.1969	.2747	1.84	1.24	4.55	(72.7)	1.24	4.28	(71.0)	1.24	4.00	(69.0)			

Values below the line are nonirrigated summerfallow values inserted where indicated irrigated values would be lower.

* Values at each water cost level are determined by the following formula:

$$\frac{(\text{Capitalized ROVC} \times 2.5) - (\text{Midpoint Watercost})}{.1492} = \text{Value}$$

APPENDIX C

This appendix contains the schedules developed by the Department of Revenue which went to rules hearings in February 1983. Accompanying the schedules is a description of how they were developed. The description was written by Department personnel and is presented here as it was written by them.

The only identifiers on the documents are the cover letter, written by Leslie A. Saisbury, Chief of the Agricultural and Timber Lands Bureau of the Department, dated December 28, 1983, and the description mentioned above.

This description is referred to in the body of this report by either its full title, or as "The Income Approach".

DEPARTMENT OF REVENUE

TED SCHWINDEN, GOVERNOR

MITCHELL BUILDING

STATE OF MONTANA

HELENA, MONTANA 59620

December 28, 1982

Dear :

The attached material represents the results of the agricultural land valuation study. The methods and resulting values were determined upon receiving comments and suggestions from various agricultural organizations. It is easily noted that the level of values for the classes and grades of agricultural land have undergone considerable change since mailing of the initial proposals in August of this year.

The Department of Revenue proposes the attached method and resulting values as the basis for valuing agricultural land for the appraisal cycle beginning January 1, 1986. We feel that the best available data has gone into the development of these schedules, and that said schedules represent a uniform and equitable basis for valuing agricultural land.

An administrative rule hearing will be held in Helena through which additional public comment, data or arguments will be considered on this proposal.

We wish to express our thanks to the various agricultural organizations for their interest, comment and suggestions in this study to this point.

Sincerely,

Leslie A. Saisbury

Leslie A. Saisbury, Chief
Agricultural/Timber Land Bureau
Property Assessment Division

LAS:ttH

THE INCOME APPROACH:

A METHOD FOR UPDATING AGRICULTURAL LAND SCHEDULES

The following represents the method for updating the agricultural land schedules. The basic method was developed by the Research Bureau of the Department of Revenue for the Agricultural Bureau of the Property Assessment Division. The research was conducted in late 1981 and throughout 1982. This section provides a summary of the capitalized net income method for updating the agricultural land schedules.

PROBLEM

Montana statutes require the appraisal of agricultural land on productive capacity. The difficulty with this standard is that productive capacity cannot be observed in real estate markets. What can be observed are land values, which (to varying degrees) reflect values inflated by speculation. Therefore, another method must be used to arrive at the required land values.

METHOD

The method for updating agricultural land schedules is the income approach. Net income per acre is estimated for different types and uses of agricultural land. The net income estimates are then capitalized to estimate land values.

Estimates of net income per acre should reflect the predominate crops grown on the particular class of land. A subset of the crops grown in the state needs to be defined for each class of land. The following crops should be recognized for their influence on the income potential of various types of land.

Land Type	Base Crop	Other predominate Crops
Non-Irrigated Farm Land (F) (Summer Fallow)	Wheat	Barley
Non-Irrigated Farm Land (CC) (Continuously Cropped)	Wheat	Barley
Wild Hay (WH)	Hay	--
Tillable Irrigated (I)		
Maximum Rotation	Alfalfa	Wheat, Barley, Sugar Beet Corn, Dry Beans
Medium Rotation	Alfalfa	Wheat, Barley, Corn
Minimum Rotation	Alfalfa	Wheat, Barley
Grazing Land (G)	Animal Unit	

The following steps are used to make the income approach operational.

1. Conversion Factor

   Since more than one crop must be considered for most types of land, it is necessary to estimate the yields of the different crops for the class of land. A conversion factor is estimated

for each type of land based on average crop yields for the land class. For example, average yields of summerfallow wheat are compared with average yields of summerfallow barley to estimate the conversion factor for non-irrigated farm lands. Similar factors are estimated for continuously cropped and irrigated lands for the crops contained in the previous table. These conversion factors allow the estimates of yields for the other predominate crops and, in essence, provide a weighting scheme for crop prices and production expenses when net income per acre is estimated.

2. Return Over Variabe Cost (ROVC) - Estimate the net income on a unit of base crop production

The net income estimate is an average figure of the income produced by the land over a complete rotation of the crop cycle. The following formula is used to estimate net income per unit output.

$$NI/unit = \frac{\sum_{i=1}^{n} T_i \, l_i \, (P_i - AVC_i)}{N}$$

Where: NI/unit is the net income estimate.
l_i is the weight (average production) obtained from the conversion factor for the i^{th} crop.
P_i is the average output price
AVC_i is the average operating cost for the i^{th} crop.
N is the number of years for a complete crop rotation. (for irrigated land only)
T_i is the proportion of total crop land in crop i (for continuously cropped and fallow only)

3. Convert ROVC per unit estimates to ROVC per acre

Multiply net income per unit estimate by the midpoints of the base crop yields contained in the schedules.

4. Estimate per acre land values from net income

The following formula is used to accomplish this objective:

$$\text{Land Value Per Acre} = \frac{\text{ROVC Per Acre}}{\text{Overall Capitalization Rate}}$$

After the appropriate overall capitalization rate is chosen, the formula and net income estimates allow the derivation of the updated land values. The overall capitalization rate should include a discount rate component and an effective tax rate component in this formulation.

DATA

The best data for use are random samples of actual farm/ranch budgets. These data would require massive amounts of primary data collection and would be both time consuming and expensive.

Given these limitations, other data sources must be used. Rather detailed information on yields, prices and expenses are required. These data were obtained from the following sources:

1. Yield data -- Montana Agricultural Statistics.

2. Price data -- Montana Agricultural Statistics and "The Annual Summary of Crop Production." (both prepared by the Montana Crop and Livestock Reporting Service.)

3. Expense data -- "Montana-Wyoming Farm Enterprise Cost and Return Data Analysis" (prepared by the Soil Conservation Service) and miscellaneous "Farm Enterprise Cost and Return" studies (prepared by the Montana Extension Service).

4. Additional income and expense data was acquired from Dr. John Lacey, Extension Range Specialist, Montana State University. This data is specific and was used in large part in determining the grazing values established.

Data used are five-year averages. Five-year averages were chosen to smooth irregularities in farm income resulting from random variations in farm production and prices.

APPLICATIONS

NON-IRRIGATED FARM LAND

Conversion Factor

SUMMERFALLOW YIELDS
(Average Bushels/Acre)

Year	Wheat*	Barley
1977	25.92	32.9
1978	30.22	39.7
1979	22.51	32.5
1980	22.94	38.5
1981	29.44	39.4
Average	26.21	36.60

*Average yields for winter, durum and spring wheats
Source: Pg. 28, Montana Agricultural Statistics, Vol. XIX

Barley yields on summerfallow average 39.64% greater than wheat yields.

Return Over Variable Costs Per Bushel Wheat

COMMODITY PRICES

Year	All Wheat	Barley
1977	$2.36	$1.68
1978	2.75	1.70
1979	3.63	2.15
1980	4.14	2.83
1981	3.69	2.35
Average	3.31	2.14

Source: Pg. 28-29, Montana Agricultural Statistics, Vol XIX

From 1977 through 1981 85.9 percent of harvested summerfallow acres were in wheat.

ROVC/Bu. Wheat = .859 (3.31 - 2.2510) + 1.3964 (.141) (2.14 - 1.687) = $.9989

ROVC/Acre And Land Values

NON-IRRIGATED FARM LAND (Summer Fallow)

Grade	Bu. Wheat/Acre	ROVC/Producing Acre	ROVC/Acre * Net of Fallow Costs	Average** ROVC/Acre	Capitali: At 10.!
1A8	40 and over	$40.9549	$21.8259	$10.9129	$103.93
1A7	38-39	38.9571	19.8281	9.9140	94.42
1A6	36-37	36.9593	17.8303	8.9151	84.91
1A5	34-35	34.9615	15.8325	7.9162	75.39
1A4	32-33	32.9637	13.8347	6.9173	65.88
1A3	30-31	30.9659	11.8369	5.9184	56.37
1A2	28-29	28.9681	9.8391	4.9195	46.85
1A1	26-27	26.9703	7.8413	3.9206	37.34
1A	24-25	24.9725	5.8435	2.9217	27.83
1B	22-23	22.9747	3.8457	1.9228	18.31
2A	20-21	20.9769	1.8479	.9239	8.80
2B	18-19	18.9791	(0.1499)		7.92
2C	16-17	16.9813	(2.1477)		7.05
3A	14-15	14.9835	(4.1455)		6.17
3B	12-13	12.9857	(6.1433)		5.30
4A	10-11	10.9879	(8.1411)		4.42
4B	8-9	8.9901	(10.1389)		3.55
5	Less than 8	6.9923	(12.1367)		2.67

* Fallow costs equal $19.129/Acre

** Represents value per tillable acre.

*** Production grades with no net income are valued by applying G6 grazing value to F5 and taking the difference between this 2.67 and the $8.80 for F2A and dividing it evenly for the grades in between. This places the values for these productive levels in conformity with grazing values established.

NON-IRRIGATED CONTINUOUSLY CROPPED FARM LAND

Conversion Factor

Continuously Cropped Yields
(Average Bushels/Acre)

Year	Wheat	Barley
1977	17.93	28.9
1978	23.84	34.1
1979	17.68	30.0
1980	19.38	34.9
1981	20.61	38.3
Average	19.89	33.24

Source: Pg. 28, Montana Agricultural Statistics, Vol. XIX

Barley yields average 67.1% greater than wheat yields.

ROVC/Bushel

From 1977 through 1981 an average of 49.7% of harvested continuously cropped lands were in wheat production.

ROVC/Bushel = .497 (3.31 - 2.2510) + .503 (1.671) (2.14 - 1.687) = $0.

ROVC/Acre and Land Values

NON-IRRIGATED CONTINUOUSLY CROPPED FARM LAND

Grade	Bu. Wheat/Acre	ROVC/Acre From 3 Crops	ROVC/Acre/Year Net of Fallow Costs*	Capitalized At 10.5%
1A4	44 & over	$122.4585	$25.8324	$246.02
1A3	42-43	117.0159	24.4717	233.06
1A2	40-41	111.5733	23.1111	220.11
1A1	38-39	106.1307	21.7504	207.15
1A	36-37	100.6881	20.3898	194.19
1	34-35	95.2455	19.0291	181.23
2	32-33	89.8029	17.6685	168.27
3	30-31	84.3603	16.3078	155.31
4	28-29	78.9177	14.9472	142.35
5	26-27	73.4751	13.5865	129.40
6	24-25	68.0325	12.2259	116.44
7	22-23	62.5899	10.8652	103.48
8	20-21	57.1473	9.5046	90.52
9	18-19	51.7047	8.1439	77.56
10	16-17	46.2621	6.7833	64.60
11	14-15	40.8195	5.4226	51.64
12	12-13	35.3769	4.0620	38.69
13	10-11	29.9343	2.7013	25.73
14	Less Than 10	24.4917	1.3407	12.77

*Fallow Costs of $19.129 subtracted and divided by 4.

GRAZING LAND

The estimates of the value of grazing lands are based extensively on data obtained from Dr. John Lacey, Extension Range Specialist, Montana State University. The data compiled by Dr. Lacey offers detailed statistics on rancing operations which could not be secured from other sources.

METHOD

The information obtained from Dr. Lacey represents the largest source of income and expense data found. This data represents income and expense obtained in 1979 and indexed up through 1981. Changes in the annual beef prices are made by forming an index of cattle prices with 1979 as the base. Similarly, expense changes are approximated by applying indexes for expenditure items as taken from Agricultural Prices, Annual Summary 1981, Crop Reporting Board, Statistical Reporting Service, U.S.D.A., pages 17-25. The following table presents the index for beef prices These indexes are applied to the 1979 base year data compiled by Dr. Lacey.

BEEF PRICE INDEX

Year	Cash Receipts* From Cattle & Calves	Marketing* (1000 lbs)	Average Price 1000 lbs	Index Value
1977	$412,820,000	1,169,350	$353.0337	0.4873
1978	582,260,000	1,051,010	554.0004	0.7647
1979	700,097,000	9,663,380	724.4531	1.0000
1980	640,507,000	1,034,103	619.368	0.8549
1981	506,095,000	933,340	542.241	0.7485

*Source: Pg. 68, Montana Agricultural Statistics, Vol. XIX

GROSS RECEIPTS AND VARIABLE COSTS

Year	Gross Receipts[1] Per Animal Unit	Variable Costs[2] Per Animal Unit
1977	$123.60	$126.23
1978	193.96	130.17
* 1979	253.64	148.02
1980	216.84	169.42
1981	189.85	185.09
Average	$195.58	$151.79

Average ROVC = $ 43.79/A.U.

* Base year 1979; [1]Gross receipts for the years preceding and following 1979 are determined by using the Beef Price Index cited earlier; [2]Variable cost figures are determined for the years prior to and following 1979 by using indexes found in Agricultural Prices, Annual Summary 1981, Crop Reporting Board, Statistical Reporting Service, U.S.D.A., pages 17-25.

Return Over Variable Cost/Animal Unit:

$ 195.58 - $ 151.79 = $ 43.79

Return Over Variable Cost/Acre and Land Values:

Grade	Grazing Land Acres/Animal Unit Midpoint	ROVC Per Acre	Capitalized At 10.5%
1A2	3.48	$12.5833	$119.84
1A1	4.80	9.1229	86.88
1A+	6.60	6.6348	63.19
1A	9.60	4.5615	43.44
1B	17.40	2.5167	23.97
2A	24.00	1.8246	17.38
2B	29.40	1.4895	14.19
3	39.00	1.1228	10.69
4	55.80	0.7848	7.47
5	93.00	0.4709	4.48
6	156.00	0.2807	2.67

The values presented in the previous table are based on cattle. A useful extension would be to incorporate sheep into the analysis. From 1975 through 1979, sheep production averaged 2.52% of cattle production. The relative size of the sheep industry suggests that the values presented in the previous table would not change significantly with the introduction of sheep.

WILD HAY LAND

Return Over Variable Cost/Unit:

$ 50.10 - $ 40.592 = $ 9.508

Return over Variable Cost/Acre and Land Values:

Grade	Tons of Hay/Acre	ROVC/Acre	Capitalized At 10.5%
1	3.0 & Over	$30.901	$294.30
2	2.5-2.9	26.147	249.02
3	2.0-2.4	21.393	203.74
4	1.5-1.9	16.639	158.47
5	1.0-1.4	11.885	113.19
6	.5- .9	7.131	67.91
7	Less than .5	2.377	45.64

TILLABLE IRRIGATED LANDS

Class I (Maximum Rotation)

Cropping Sequences:

1. Sugar Beets - Corn - Spring Wheat - 3 years Alfalfa - Barley
2. Beans - Spring Wheat - 3 years Alfalfa - Barley

Source: Howard Bowman, Agronomist, Mt. Cooperative Extension Service

Conversion Factor:

1 Ton Alfalfa = 5.329 cwt Beans = 6.508 Tons Beets = 24.495 bu. Corn
= 16.547 Bu. Spring Wheat = 20.326 Bu. Barley

Return over Variable Cost/Ton Alfalfa:

Cropping Sequence #1

ROVC/Ton = [3(53.5 - 40.592) + 6.508 (35.67 - 25.753) + 24.495(2.76 - 2.454) + 16.547 (3.31 - 2.897) + 20.326 (2.14 - 2.030)] ÷ 7 = $17.118

Cropping Sequence #2

ROVC/Ton = [3(53.5 - 40.592) + 5.329 (21.06 - 13.598) + 16.547 (3.31 - 2.897) + 20.326 (2.14 - 2.030)] ÷ 6 = $14.593

Average Over Both Sequences - $15.855

Return Over Variable Cost/Acre and Land Values

Class I (Maximum Rotation)

Grade	Tons Alfalfa/Acre	ROVC/Acre	Capitalized At 10.5%
1A	4.5 +	$75.3112	$717.25
1B	4.0-4.4	67.3837	641.75
2	3.5-3.9	59.4562	566.25
3	3.0-3.4	51.5287	490.75
4	2.5-2.9	43.6012	415.25
5	2.0-2.4	35.6737	339.75
6	1.5-1.9	27.7462	264.25
7	1.0-1.4	19.8187	188.75
8	Less than 1.0	11.8912	113.25

Class II (Medium Rotation)

Cropping Sequence:
Corn - Barley - 3 Years Alfalfa - Spring Wheat

Return Over Variable Cost/Ton Alfalfa:
ROVC/Ton = [3(53.5 - 40.592) + 24.495 (2.76 - 2.454) + 20.326 (2.14 - 2.0
+ 16.547 (3.31 - 2.897)] ÷ 6 = $9.215

Return Over Variable Cost/Acre and Land Values

Class II (Medium Rotation)

Grade	Tons Alfalfa/Acre	ROVC/Acre	Capitalized At 10.5%
1A	4.5 +	$43.7712	$416.87
1B	4.0-4.4	39.1637	372.99
2	3.5-3.9	34.5562	329.11
3	3.0-3.4	29.9487	285.23
4	2.5-2.9	25.3412	241.34
5	2.0-2.4	20.7337	197.41
6	1.5-1.9	16.1262	153.58
7	1.0-1.4	11.5187	109.70
8	Less than 1.0	6.9112	65.82

Class III (Minimum Rotation)

Cropping Sequence:
Barley - 3 years Alfalfa - Spring Wheat - Summer Fallow

Return Over Variable Cost/Ton Alfalfa With One-Year Summer Fallow:
ROVC/Acre = [3(53.5 - 40.592) + 20.326 (2.14 - 2.030) + 16.547
(3.31 - 2.897) - 19.129)] ÷ 6 = $4.777

Return Over Variable Cost/Acre and Land Values

Class III (Minimum Rotation)

Grade	Tons Alfalfa/Acre	ROVC/Acre	Capitalized At 10.5%
1A	4.5 +	$22.6907	$216.10
1B	4.0-4.4	20.3022	193.35
2	3.5-3.9	17.9137	170.61
3	3.0-3.4	15.5252	147.86
4	2.5-2.9	13.1367	125.11
5	2.0-2.4	10.7482	102.36
6	1.5-1.9	8.3597	79.62
7	1.0-1.4	5.9712	56.87
8	Less than 1.0	3.5827	34.12

YEARLY YIELD DATA

CROP	1977	1978	1979	1980	1981	Average
Summer Fallow						
Wheat (bu./acre)	25.92	30.22	22.51	22.94	29.44	26.21
Barley (bu./acre)	32.9	39.7	32.5	38.5	39.4	36.60
Continuously Cropped						
Wheat (bu./acre)	17.93	23.84	17.68	19.38	20.61	19.89
Barley (bu./acre)	28.9	34.1	30.0	34.9	38.3	33.24
Irrigated						
Spring Wheat (bu/acre)	45.4	49.8	48.9	54.9	55.0	50.8
Barley (bu./acre)	59.0	64.0	63.0	61.0	65.0	62.4
Corn (bu./acre)	68.0	72.0	77.0	74.0	85.0	75.2
Dry Beans (cwt./acre)	16.0	15.0	18.0	16.0	16.8	16.36
Alfalfa (tons/acre)	2.75	2.86	3.13	3.14	3.45	3.07
Sugar Beets (tons/acre)	19.9	19.8	19.1	20.3	20.8	19.98

Source: Montana Agricultural Statistics, Vol. XIX

OPERATING COST/UNIT

	1977	1978	1979	1980*	1981	Average
Irrigated						
Feed Barley ($/bu.)	1.655	1.781	1.982	2.25	2.483	2.030
Malt Barley ($/bu.)	2.052	2.209	2.458	2.79	3.079	2.518
Spring Wheat ($/bu.)	2.361	2.541	2.828	3.21	3.543	2.897
Winter Wheat ($/bu.)	2.280	2.454	2.731	3.10	3.421	2.797
Alfalfa ($/Ton)	32.593	35.088	39.041	44.32	48.916	40.592
Corn for Grain ($/bu.)	2.000	2.153	2.396	2.72	3.002	2.454
Sugar Beets ($/Ton)	20.988	22.595	25.141	28.54	31.500	25.753
Dry Beans ($/cwt.)	11.082	11.931	13.275	15.07	16.633	13.598
Dry Land						
Fallow/Acre ($/acre)	15.590	16.784	18.675	21.20	23.398	19.129
Spring Wheat ($/bu.)	1.927	2.074	2.308	2.62	2.892	2.364
Barley ($/bu.)	1.375	1.480	1.647	1.87	2.064	1.687
Winter Wheat ($/bu.)	1.780	1.916	2.132	2.42	2.671	2.184

The years 1977, 1978, 1979 and 1981 are derived by use of Consumer Price Index applied to base data for 1980.

* Base data from Montana-Wyoming Farm Enterprise Cost and Return Data Analysis, p.5.

COMMODITY PRICES (Per Unit Production)

Year	Dry Beans	Beets	Corn	(All Hay) Alfalfa	All Wheat	Barley
1981	$20.00	*	$3.30	$50.50	$3.69	$2.35
1980	25.00	$51.40	3.60	62.50	4.14	2.83
1979	25.00	32.30	2.40	54.50	3.63	2.15
1978	16.50	29.90	2.25	44.00	2.75	1.70
1977	18.80	29.10	2.27	56.00	2.36	1.68
Average	$21.06	$35.67	$2.76	$53.50	$3.31	$2.14

* Data not available at this time

Source: Montana Agricultural Statistics, Vol. XIX (Prepared by the Montana Crop and Livestock Reporting Service.)

Prices All Other Hay - For Wild Hay/Ton

Month	1977	1978	1979	1980	1981
Jan	*	$ 54.00	$ 42.50	$ 51.00	$ 60.00
Feb	*	57.50	43.00	49.00	55.00
Mar	*	59.00	43.00	50.00	55.00
Apr	*	56.50	43.50	52.00	50.00
May	*	52.00	41.50	50.00	48.00
June	*	46.50	45.00	55.00	46.00
July	54.00	43.00	45.50	60.00	47.00
Aug	57.50	40.50	49.50	60.00	47.00
Sept	53.50	39.50	50.00	60.00	46.00
Oct	52.50	37.50	50.00	62.00	50.00
Nov	52.00	37.00	50.00	63.00	50.00
Dec	51.50	39.50	52.50	60.00	40.00

4½ year ave. = $ 50.10

From Montana Crop & Livestock Reporter, Monthly Agricultural Prices 1977-1981.

* There are no prices for all other hay listed prior to July 1977.

The adjustment in taxable percentage needed to generate approximately the same total statewide taxable value on agricultural land would be from the present 30% level to 14%.

A table showing the relationship between the average value of each class of land in this proposal as compared to the average market value of Montana land presented in the Montana Crop and Livestock Reporter dated April 15, 1981 is shown for purposes of comparison.

	Average Proposed Value	Market * Value Feb 1, 1981	Proposed as % of Market	Proposed ** Indicated Taxable %
Irrigated Farm Land	$ 260.57	$ 1155	22.6 %	
Dry Cropland	84.21	375	22.5	14%
Non-Irrigated Grazing	35.84	175	20.5	

* These values from Montana Crop and Livestock Reporter, April 15 1981. These values include improvements.

** The percentage figure here represents the indicated rate that would generate approximately the same tax base as is presently generated by applying the 30% taxable rate against present values.

Capitalization

The basic formula, $V = \frac{I}{R}$ is commonly used to estimate values where,

V = Land Value
I = Net Income
R = Capitalization Rate (appropriate discount rate + effective tax rate)

Use of this formula in valuing agricultural land assumes that Net Income remains constant through time. However, we know that net income on farm properties has increased through time (an average of 4.25% per year since WWII).

To correct this assumption, the following formula is used:

$V = \frac{1+g}{r-g}$ N. I. , where
V = Land Value
g = Rate of growth of net income into the future (4.25%)
r = Discount Rate, and
N.I. = Net Income

Use of this particular formula also produces land values more in line with what is felt to be occurring in the market place. Current marketing conditions would tend to alter this fact, but it is felt by most people that the current downward trend is a short run situation.

The formula was taken from an article published in the American Journal of Agricultural Economics, Vol. 61 #5, December 1979 by Emanuel Melichar. Dr. Richard McConnen of the Agricultural Economics Department of Montana State University suggested this formula would be more appropriate in determining updated land values.

Discount Rate

Derivation of the discount rate by use of this formula is as follows:

$$V = \frac{1+g}{r-g} \text{ N.I.} = \frac{1 + .0425}{.0962 - .0425} \text{ N.I.}$$

(9.62% represents the five year 1977-1981 weighted average of Federal Land Bank interest rates)

$$= \frac{1.0425}{.0537} \text{ N.I.}$$ which

$$= (19.413)(\text{N.I.})$$ or inversely

$$\frac{1}{19.413} = .052,$$ then

$$\frac{\text{N.I.}}{.052} = \text{Capitalized Net Income}$$

Discount Rate = 5.2%

Effective Tax Rate

Where property taxes are not deducted as a specific operating expense the effective tax rate is determined as a component in an overall capitalization rate. Effective tax rate is determined by multiplying the statutory taxable percentage by the statewide average rural mill levy.

Effective Tax Rate = 30% x .175 where

30 % = Present taxable percentage agricultural land
.175 = Approximate average rural mill rate for Montana

Effective Tax Rate = 5.3 %

Overall Capitalization Rate

The overall capitalization rate is comprised of the sum of the discount and effective tax rates determined previously.

Overall Capitalization Rate = Discount Rate + Effective Tax Rate

= 5.2 % + 5.3 %

= 10.5 %

APPENDIX D

This appendix contains the schedules referred to in the report as "ALTERNATIVE IV". An explanation of how the Department of Revenue developed the schedules accompanies the schedules.

Unfortunately perhaps, the only identifier on this document, aside from the cover sheet, is titled "The Income Approach: A Method For Updating Agricultural Land Schedules". (No author listed.) This is the same title as used on the documents contained in Appendix C. However, there are differences between the two which are significant. Two of those are the capitalization rate and the production period needed to calculate net income. The cap rate used in Appendix C is 10.5% while the rate used in this appendix (Alternative IV) is 5.2%. The production period used in Appendix C is 1977-1981, while the production period used here is 1975-1979. Both differences cause quite substantial variations in the final schedules.

ALTERNATIVE IV

The final option or alternative to be considered here is updating of the agricultural values through capitalization of net income. The points favoring this approach include:

1. This was the basic approach employed in development of the existing values.
2. It produces values based on production as do the other approaches.

There are several problems encountered with this approach however:

1. It is the most difficult to update because of the availability of data.

2. It takes the most time administratively to develop.

3. While the gross income portion of this approach is easy to establish, the operating expense side is not.

4. Expense data necessary to determine average production expenses on different types and productivity levels of land is very limited and difficult to obtain. There is simply not adequate data readily available to arrive at substantive averages to apply statewide.

5. The wide variability in production costs between ownerships across the state causes major problems in determining what a typical average should be.

6. Selection of an average capitalization rate to apply statewide is very difficult since these rates vary from area to area and from crop type to crop type.

7. It is possible, as will be shown in the attached tables, to encounter net losses instead of net incomes. This then poses another problem; how can you develop values based on net income when there is no net income.

8. The variability in expense data particularly makes this approach very difficult to use in a mass appraisal situation. This approach would be more suitable if we were individually auditing each operation. This, however, is a virtual impossibility in a statewide mass appraisal cycle. To do this would take an excessive amount of time, expense and personnel. The Department personnel are involved in classifying and grading the productive capacity of all ownerships presently, and the valuation schedules are then applied uniformly statewide.

The attached tables show the development of base values for agricultural land determined by capitalization of net income.

THE INCOME APPROACH:

A METHOD FOR UPDATING AGRICULTURAL LAND SCHEDULES

The following represents a method for updating the agricultural land schedules. The basic method was developed by the Research Bureau of the Department of Revenue for the Agricultural Bureau of the Property Assessment Division. The research was conducted in late 1981 and early 1982. This section provides a summary of the capitalized net income method for updating the agricultural land schedules.

PROBLEM

Montana statutes require the appraisal of agricultural land on productive capacity. The difficulty with this standard is that productive capacity cannot be observed in real estate markets. What can be observed are land values, which (to varying degrees) reflect values inflated by speculation. Therefore, another method must be used to arrive at the required land values.

METHOD

The method for updating agricultural land schedules is the income approach. Net income per acre is estimated for different types and uses of agricultural land. The net income estimates are then capitalized to estimate land values.

Estimates of net income per acre should reflect the predominate crops grown on the particular class of land. A subset of the crops grown in the state needs to be defined for each class of land. The following crops should be recognized for their influence on the income potential of various types of land.

Land Type	Base Crop	Other predominate Crops
Non-Irrigated Farm Land (F) (Summer Fallow)	Wheat	Barley
Non-Irrigated Farm Land (CC) (Continuously Cropped)	Wheat	Barley
Wild Hay (WH)	Hay	--
Tillable Irrigated (I)		
Maximum Rotation	Alfalfa	Wheat, Barley, Sugar Beets, Corn, Dry Beans
Medium Rotation	Alfalfa	Wheat, Barley, Corn
Minimum Rotation	Alfalfa	Wheat, Barley
Grazing Land (G)	Animal Unit	

The following steps are used to make the income approach operational.

1. Conversion Factor

   Since more than one crop must be considered for most types of land, it is necessary to estimate the yields of the different crops for the class of land. A conversion factor is estimated

for each type of land based on average crop yields for the land class. For example, average yields of summerfallow wheat are compared with average yields of summerfallow barley to estimate the conversion factor for non-irrigated farm lands. Similar factors are estimated for continuously cropped and irrigated lands for the crops contained in the previous table. These conversion factors allow the estimates of yields for the other predominate crops and, in essence, provide a weighting scheme for crop prices and production expenses when net income per acre is estimated.

2. Return Over Variabe Cost (ROVC) - Estimate the net income on a unit of base crop production

The net income estimate is an average figure of the income produced by the land over a complete rotation of the crop cycle. The following formula is used to estimate net income per unit output.

$$N.I./unit = \frac{\sum_{i=1}^{n} T_i l_i (P_i - AVC_i)}{N}$$

Where: NI/unit is the net income estimate.
l_i is the weight (average production) obtained from the conversion factor for the i^{th} crop.
P_i is the average output price
AVC_i is the average operating cost for the i^{th} crop.
N is the number of years for a complete crop rotation.
T_i is the proportion of total crop land in crop i (for continuously cropped and fallow only) making the division by N unnecessary.

3. Convert ROVC per unit estimates to ROVC per acre

Multiply net income per unit estimate by the midpoints of the base crop yields contained in the schedules.

4. Estimate per acre land values from net income

The following formula is used to accomplish this objective:

$$\text{Land Value Per Acre} = \frac{\text{ROVC Per Acre}}{\text{Rate of Return}}$$

After the appropriate rate of return is chosen, the formula and net income estimates allow the derivation of the updated land values. The rate of return should include an investment recapture component in this formulation.

DATA

The best data for use are random samples of actual farm/ranch budgets. These data would require massive amounts of primary data collection and would be both time consuming and expensive.

Given these limitations, other data sources must be used. Rather detailed information on yields, prices and expenses are required. These data were obtained from the following sources:

1. Yield data -- Montana Agricultural Statistics.

2. Price data -- Montana Agricultural Statistics and "The Annual Summary of Crop Production." (both prepared by the Montana Crop and Livestock Reporting Service.)

3. Expense data -- "Montana-Wyoming Farm Enterprise Cost and Return Data Analysis" (prepared by the Soil Conservation Service) and miscellaneous "Farm Enterprise Cost and Return" studies (prepared by the Montana Extension Service).

4. Additional income and expense data were acquired from the Federal Land Bank. This data was applied in determining the values on grazing land since more data was available on ranching operations than from the expense data source cited above.

Data used are five-year averages. Five-year averages were chosen to smooth irregularities in farm income resulting from random variations in farm production and prices.

APPLICATIONS

NON-IRRIGATED FARM LAND

Conversion Factor

SUMMERFALLOW YIELDS
(Average Bushels/Acre)

Year	Wheat*	Barley
1975	32.13	38.5
1976	31.17	44.5
1977	26.08	32.9
1978	30.22	39.7
1979	22.61	32.5
Average	28.44	37.62

*Average yields for winter and spring wheats
Source: Pg. 30, Montana Agricultural Statistics, Vol. XVIII

Barley yields on summerfallow average 32.28% greater than wheat yields.

Return Over Variable Costs Per Bushel Wheat

COMMODITY PRICES

Year	All Wheat	Barley
1977	$2.36	$1.68
1978	2.75	1.70
1979	3.56	2.13
1980	4.14	2.83
1981	3.67	2.20
Average	3.30	2.11

Sources: 1980 and 1981 Annual Crop Summaries and pg. 28-29, Montana Agricultural Statistics, Vol XVIII

From 1975 through 1979 85.8 percent of harvested summerfallow acres were in wheat.

ROVC/Bu. Wheat = .858(3.30 - 2.2510) + 1.3228(.142)(2.11 - 1.687) = $.9795

ROVC/Acre And Land Values

NON-IRRIGATED FARM LAND

Grade	Bu. Wheat/Acre	ROVC/Producing Acre	ROVC/Acre * Net of Fallow Costs	Average** ROVC/Acre	Capitalized At 5.2%
1A8	40 and over	$40.1595	$21.0305	$10.5152	$202.22
1A7	38-39	38.2005	19.0715	9.5357	183.38
1A6	36-37	36.2415	17.1125	8.5562	164.54
1A5	34-35	34.2825	15.1535	7.5767	145.71
1A4	32-33	32.3235	13.1945	6.5972	126.87
1A3	30-31	30.3645	11.2355	5.6177	108.03
1A2	28-29	28.4055	9.2765	4.6382	89.20
1A1	26-27	26.4465	7.3175	3.6587	70.36
1A	24-25	24.4875	5.3585	2.6792	51.52
1B	22-23	22.5285	3.3995	1.6997	32.69
2A	20-21	20.5695	1.4405	.7202	13.85
2B	18-19	18.6105	(0.5185)		
2C	16-17	16.6515	(2.4775)		
3A	14-15	14.6925	(4.4365)		
3B	12-13	12.7335	(6.3955)		
4A	10-11	10.7745	(8.3545)		
4B	8-9	8.8155	(10.3135)		
5	Less than 8	6.8565	(12.2725)		

* Fallow costs equal $19.129/Acre

**Represents value per tillable acre.

NON-IRRIGATED CONTINUOUSLY CROPPED FARM LAND

Conversion Factor

Continuously Cropped Yields
(Average Bushels/Acre)

Year	Wheat	Barley
1975	24.78	29.4
1976	24.32	33.8
1977	18.02	28.9
1978	23.61	34.1
1979	17.51	30.0
Average	21.65	31.24

Source: Pg. 30, Montana Agricultural Statistics, Vol. XVIII

Barley yields average 44.3% greater than wheat yields.

ROVC/Bushel

From 1975 through 1979 an average of 45.14% of harvested continuously cropped lands were in barley production.

ROVC/Bushel = .5486 (3.30 - 2.2510) + .4514(1.443)(2.11 - 1.687) = $0.8510

ROVC/Acre and Land Values

NON-IRRIGATED CONTINUOUSLY CROPPED FARM LAND

Grade	Bu. Wheat/Acre	ROVC/Acre From 3 Crops	ROVC/Acre/Year Net of Fallow Costs*	Capitalized At 5.2%
1A4	44 & over	$114.885	$23.9390	$460.37
1A3	42-43	109.779	22.6625	435.82
1A2	40-41	104.673	21.3860	411.27
1A1	38-39	99.567	20.1095	386.72
1A	36-37	94.461	18.8330	362.17
1	34-35	89.355	17.5565	337.62
2	32-33	84.249	16.2800	313.08
3	30-31	79.143	15.0035	288.53
4	28-29	74.037	13.7270	263.98
5	26-27	68.931	12.4505	239.43
6	24-25	63.825	11.1740	214.88
7	22-23	58.719	9.8975	190.34
8	20-21	53.613	8.6210	165.79
9	18-19	48.507	7.3445	141.24
10	16-17	43.401	6.0680	116.69
11	14-15	38.295	4.7915	92.14
12	12-13	33.189	3.5150	67.60
13	10-11	28.083	2.2385	43.05
14	Less Than 10	22.977	.9620	18.50

*Fallow Costs of $19.129 subtracted and divided by 4.

GRAZING LAND

The estimates of the value of grazing lands are based extensively on information obtained from the Federal Land Bank. This approach was necessary due to the lack of detailed production statistics. The data limitation prevents the use of the same methods that were used on the crop lands.

METHOD

The information obtained from the Federal Land Bank presented actual gross receipts and expenses of 3 "typical" on-going ranching operations in Montana for the year 1981. The resulting analysis established the return over variable cost for the base year with which the effects of price fluctuations can be ascertained. Changes in beef prices are handled by forming an index of cattle prices with 1978 as the base. Similarly, cost changes are approximated by using the 1978 value of the Consumer Price Index as the base. The following table presents the index for beef prices.

BEEF PRICE INDEX

Year	Cash Receipts* From Cattle & Calves	Marketing* (1000 lbs)	Average Price 1000 lbs	Index Value
1977	$412,820,000	1,169,350	$353.0337	0.6372
1978	582,260,000	1,051,010	554.0004	1.000
1979	700,097,000	9,663,380	724.4531	1.3077
1980	640,507,000	1,034,103	619.368	1.1180
1981	506,095,000	933,340	542.241	0.9788

*Source: Pg. 71, Montana Agricultural Statistic, Vol. XVIII 1980 and 1981 values obtained from Bud Lies, Statistical Reporting Service, Helena.

GROSS RECEIPTS AND VARIABLE COSTS

Custer County

Year	Gross Receipts[1] Per Animal Unit	Variable Costs[2] Per Animal Unit
1977	$150.95	$100.20
1978	236.97	107.88
1979	309.78	120.02
1980	264.80	136.26
*1981	231.87	150.39
Average	$238.87	$122.95

Average ROVC = $115.92

Phillips County

Year	Gross Receipts[1] Per Animal Unit	Variable Costs[2] Per Animal Unit
1977	$135.69	$ 86.64
1978	213.03	93.27
1979	278.48	103.78
1980	238.04	117.81
*1981	208.44	130.03
Average	$214.74	$106.31

Average ROVC = $108.43

Judith Basin County

Year	Gross Receipts[1] Per Animal Unit	Variable Costs[2] Per Animal Unit
1977	$174.86	$114.38
1978	274.52	123.14
1979	358.86	137.00
1980	306.75	155.53
*1981	268.61	171.66
Average	$276.72	$140.34

Average ROVC = $136.38

* Base year 1981; [1]Gross receipts for the years preceding 1981 are determined by using the Beef Price Index cited earlier; [2]Variable cost figures for the years preceding 1981 are determined by using the Consumer Price Index also used prior.

By averaging the ROVC of these three ranches an average ROVC is determined and will be applied to estimate land values. The average ROVC of these 3 operations is $120.24 per animal unit.

Grade	Grazing Land Acres/Animal Unit Midpoint	ROVC Per Acre	Capitalized At 5.2%
1A2	3.48	$34.5517	$664.46
1A1	4.80	25.0500	481.73
1A+	6.60	18.2182	350.35
1A	9.60	12.5250	240.87
1B	17.40	6.9103	132.89
2A	24.00	5.0100	96.35
2B	29.40	4.0900	78.65
3	39.00	3.0831	59.29
4	55.80	2.1548	41.44
5	93.00	1.2929	24.86
6	156.00	.7708	14.82

The values presented in the previous table are based on cattle. A useful extension would be to incorporate sheep into the analysis. From 1975 through 1979, sheep production averaged 2.52% of cattle production. The relative size of the sheep industry suggests that the values presented in the previous table would not change significantly with the introduction of sheep.

WILD HAY LAND

Return Over Variable Cost/Unit:

$54.6 - $40.592 = $14.008

Return over Variable Cost/Acre and Land Values:

Grade	Tons of Hay/Acre	ROVC/Acre	Capitalized At 5.2%
1	3.0 & Over	$45.526	$875.50
2	2.5-2.9	38.522	740.81
3	2.0-2.4	31.518	606.12
4	1.5-1.9	24.514	471.42
5	1.0-1.4	17.510	336.73
6	.5- .9	10.506	202.04
7	Less than .5	3.502	67.35

TILLABLE IRRIGATED LANDS

Class I (Maximum Rotation)

Cropping Sequences:

1. Sugar Beets - Corn - Spring Wheat - 3 years Alfalfa - Barley
2. Beans - Spring Wheat - 3 years Alfalfa - Barley

Source: Howard Bowman, Agronomist, Mt. Cooperative Extension Service

Conversion Factor:

1 Ton Alfalfa = 5.714 cwt Beans = 6.753 Tons Beets = 25.436 bu. Corn
=16.202 Bu. Spring Wheat = 21.031 Bu. Barley

Return over Variable Cost/Ton Alfalfa:

Cropping Sequence #1

ROVC/Ton = [3(54.6 - 40.592) + 6.753 (36.93 - 25.753) + 25.436(2.76 - 2.454) + 16.202 (3.30 - 2.897) + 21.031 (2.11 - 2.030)] ÷ 7 = $19.3114

Cropping Sequence #2

ROVC/Ton = [3(54.6 - 40.592) + 5.714 (20.86 - 13.598) + 16.202 (3.30 - 2.897) + 21.031 (2.11 - 2.030)] ÷ 6 = $15.5689

Average Over Both Sequences - $17.3253

Return Over Variable Cost/Acre and Land Values

Class I (Maximum Rotation)

Grade	Tons Alfalfa/Acre	ROVC/Acre	Capitalized At 5.2%
1A	4.5 +	$82.2952	$1582.60
1B	4.0-4.4	73.6325	1416.01
2	3.5-3.9	64.9699	1249.42
3	3.0-3.4	56.3072	1082.83
4	2.5-2.9	47.6446	916.24
5	2.0-2.4	38.9819	749.65
6	1.5-1.9	30.3193	583.06
7	1.0-1.4	21.6566	416.47
8	Less than 1.0	12.9940	249.88

Class II (Medium Rotation)

Cropping Sequence:

Corn - Barley - 3 Years Alfalfa - Spring Wheat

Return Over Variable Cost/Ton Alfalfa:

ROVC/Ton = [3(54.6 - 40.592) + 25.436 (2.76 - 2.454) + 21.031 (2.11 - 2.030) + 16.202 (3.30 - 2.897)] ÷ 6 = $9.6699

Return Over Variable Cost/Acre and Land Values

Class II (Medium Rotation)

Grade	Tons Alfalfa/Acre	ROVC/Acre	Capitalized At 5.2%
1A	4.5 +	$45.9320	$883.31
1B	4.0-4.4	41.0971	790.33
2	3.5-3.9	36.2621	697.35
3	3.0-3.4	31.4272	604.37
4	2.5-2.9	26.5922	511.39
5	2.0-2.4	21.7573	418.41
6	1.5-1.9	16.9223	325.43
7	1.0-1.4	12.0874	232.45
8	Less than 1.0	7.2524	139.47

Class III (Minimum Rotation)

Return Over Variable Cost/Ton Alfalfa With One-Year Summer Fallow:

ROVC/Acre = [3(54.6 - 40.592) + 21.031 (2.11 - 2.030) + 16.202 (3.30 - 2.897) - 19.129)] ÷ 6 = $5.1845

Return Over Variable Cost/Acre and Land Values

Class III (Minimum Rotation)

Grade	Tons Alfalfa/Acre	ROVC/Acre	Capitalized At 5.2%
1A	4.5 +	$24.6264	$473.58
1B	4.0-4.4	22.0341	423.73
2	3.5-3.9	19.4419	373.88
3	3.0-3.4	16.8496	324.03
4	2.5-2.9	14.2574	274.18
5	2.0-2.4	11.6651	224.33
6	1.5-1.9	9.0729	174.48
7	1.0-1.4	6.4806	124.63
8	Less than 1.0	3.8884	74.78

YEARLY YIELD DATA

CROP	1975	1976	1977	1978	1979	Average
Summer Fallow						
Wheat (bu./acre)	32.13	31.17	26.08	30.22	22.61	28.44
Barley (bu./acre)	38.5	44.5	32.9	39.7	32.5	37.62
Continuously Cropped						
Wheat (bu./acre)	24.78	24.32	18.02	23.61	17.51	21.65
Barley (bu./acre)	19.4	33.8	28.9	34.1	30.0	31.24
Irrigated						
Spring Wheat (bu/acre)	44.1	44.3	45.4	49.8	48.9	46.5
Barley (bu./acre)	56.3	59.5	59.0	64.0	63.0	60.36
Corn (bu./acre)	73.0	75.0	68.0	72.0	77.0	73.0
Dry Beans (cwt./acre)	16.0	17.0	16.0	15.0	18.0	16.40
Alfalfa (tons/acre)	2.77	2.77	2.75	2.92	3.13	2.87
Sugar Beets (tons/acre)	17.1	21.0	19.9	19.8	19.1	19.38

Source: Montana Agricultural Statistics, Vol. XVIII

OPERATING COST/UNIT

	1977	1978	1979	1980*	1981	Average
Irrigated						
Feed Barley ($/bu.)	1.655	1.781	1.982	2.25	2.483	2.030
Malt Barley ($/bu.)	2.052	2.209	2.458	2.79	3.079	2.518
Spring Wheat ($/bu.)	2.361	2.541	2.828	3.21	3.543	2.897
Winter Wheat ($/bu.)	2.280	2.454	2.731	3.10	3.421	2.797
Alfalfa ($/Ton)	32.593	35.088	39.041	44.32	48.916	40.592
Corn for Grain ($/bu.)	2.000	2.153	2.396	2.72	3.002	2.454
Sugar Beets ($/Ton)	20.988	22.595	25.141	28.54	31.500	25.753
Dry Beans ($/cwt.)	11.082	11.931	13.275	15.07	16.633	13.598
Dry Land						
Fallow/Acre ($/acre)	15.590	16.784	18.675	21.20	23.398	19.129
Spring Wheat ($/bu.)	1.927	2.074	2.308	2.62	2.892	2.364
Barley ($/bu.)	1.375	1.480	1.647	1.87	2.064	1.687
Winter Wheat ($/bu.)	1.780	1.916	2.132	2.42	2.671	2.184

The years 1977, 1978, 1979 and 1981 are derived by use of Consumer Price Index applied to base data for 1980.

* Base data from Montana-Wyoming Farm Enterprise Cost and Return Data Analysis, p.5.

COMMODITY PRICES (Per Unit Production)

Year	Dry Beans	Beets	Corn	(All Hay) Alfalfa	All Wheat	Barley
1981	$20.00	*	$3.30	$55.00	$3.67	$2.20
1980	25.00	$51.40	3.60	62.50	4.14	2.83
1979	24.00	37.30	2.38	55.50	3.56	2.13
1978	16.50	29.90	2.23	44.00	2.75	1.70
1977	18.80	29.10	2.27	56.00	2.36	1.68
Average	$20.86	$36.93	$2.76	$54.60	$3.30	$2.11

* Data not available at this time

Source: Montana Agricultural Statistics, Vol. XVIII and "The Annual Summary of Crop Production." (Both prepared by the Montana Crop and Livestock Reporting Service.)

The necessary adjustment in taxable percentage, should this option be adopted, would be from the present 30% level to 3.3%. This, of course, was derived by considering only those production levels which generate a positive value or net income.

Capitalization Rate

The basic formula, $V = \frac{I}{R}$ is commonly used to estimate values where,

V = Land Value
I = Net Income
R = Capitalization Rate (appropriate discount rate)

Use of this formula in valuing agricultural land assumes that Net Income remains constant through time. However, we know that net income on farm properties has increased through time (an average of 4.25% per year since WWII).

To correct this assumption, the following formula is used:

$V = \frac{1+g}{r-g}$ N. I.
V = Land Value
g = Rate of growth of net income into the future (4.25%)
r = Discount Rate, and
N.I. = Net Income

Use of this particular formula also produces land values more in line with what is felt to be occurring in the market place. Current marketing conditions would tend to alter this fact, but it is felt by most people that the current downward trend is a short run situation.

The formula was taken from an article published in the American Journal of Agricultural Economics, Vol. 61 #5, December 1979 by Emanuel Melichar. Dr. Richard McConnen of the Agricultural Economics Department of Montana State University suggested this formula would be more appropriate in determining updated land values.

Derivation of the capitalization rate by use of this formula is as follows:

$$V = \frac{1+g}{r-g} \text{ N.I.} = \frac{1 + .0425}{.0962 - .0425} \text{ N.I.}$$

(9.62% represents the five year 1977-1981 weighted average of Federal Land Bank interest rates)

$$= \frac{1.0425}{.0537} \text{ N.I.}$$ which

$$= (19.413)(\text{N.I.})$$ or inversely

$$\frac{1}{19.413} = .052,$$ then

$$\frac{\text{N.I.}}{.052} = \text{Capitalized Net Income}$$

Capitalization Rate = 5.2%

ALTERNATIVE IV

If the above approach were to be adopted, there are 2 things that would have to be corrected.

1. Something would have to be done to rectify the situation with non-irrigated farmland (summerfallow) where there are no values because of no indicated net income.

2. More data on income and expenses is necessary on grazing land. Since this data is so limited, it seems quite probable that a survey requiring additional time would be necessary to accomplish this data acquisition.

Finally, an example to illustrate what gross variations in income an expense data can do to the end base value is shown below. This was the first study on grazing land. The base year data was taken from a 1978 enterprise cost study done in Yellowstone County.

The following table presents the gross receipt and expense estimates for the period from 1977 through 1981.

GROSS RECEIPTS & VARIABLE COST

Year	Gross Receipts Per Animal Unit	Variable Cost Per Animal Unit
1977	$122.763	$119.4658
1978*	192.660	128.6100
1979	251.9415	143.0915
1980	215.394	170.0739
1981	188.576	184.7483
Average	194.2669	$149.1979
Average ROVC	$45.069	

* Base Year Values
1980 Value = 192.66 (1.1180) = 215.394
1981 Value = 192.66 (.09788) = 188.576

Gross Receipts for years prior to 1978 and after were established by using the Beef Price Index noted earlier.

Variable Costs for years prior to 1978 and after were established by using the Consumer Price Index.

The base values derived by using this input data are shown below.

For this period, ROVC is estimated to average $45.069 per animal unit. The next step involves using this figure to calculate ROVC per acre and estimate land values. These estimates are given below.

Grade	Grazing Land Acres/AnimalUnit Midpoint	ROVC/Acre	Capitalized At 5.2%
1A2	(3.48)	$12.9507	$249.05
1A1	(4.80)	9.3894	180.57
1A+	(6.60)	6.8286	131.32
1A	(9.60)	4.6947	90.28
1B	(17.40)	2.5902	49.81
2A	(24.00)	1.8779	36.11
2B	(29.40)	1.5330	29.48
3	(39.00)	1.1556	22.22
4	(55.80)	.8077	15.53
5	(93.00)	.4846	9.32
6	(156.00)	.2889	5.56

Compare this with the results shown on page 10 of this alternative and note the effect of the different input data.

Appendix E

The information contained in this appendix was the method initially recommended by the Department of Revenue in the late summer and fall of 1982. It is titled only "ALTERNATIVE II", and describes a method for revising agricultural land valuation schedules, an "Adjusted Gross Income Method". It was prepared by Department of Revenue personnel.

ALTERNATIVE II

This suggested method of updating the agricultural values is an approach dealing with adjusted potential gross income. This particular approach is suggested for the following reasons:

1. The input data is readily available on a statewide basis annually.

2. It does provide a valuing system based on production.

3. It is relatively simple to understand and, therefore, to explain.

4. It does bring values to a current level.

5. In a mass appraisal situation such as we have in Montana, this approach eliminates the excessive expense variables necessary in a net income approach.

6. The adjustment factor keeps the impact within each of the five agricultural classes constant at any production level.

7. It provides a relatively simple basis for future updating.

If there is a problem with this approach compared to other alternatives, it is that the base values derived are the lowest of all four alternatives.

The following tables show the proposed values for the existing classes and grades of agricultural land.

ADJUSTED POTENTIAL GROSS INCOME

The basic formula used:

Adjusted Potential Gross Income = Midpoint Production (each grade) X weighted 5 year average commodity prices X adjustment factor.

The adjustment factor accomplishes 3 things:

1. It allows for adjustment of all classes and grades within classes to the average relationship between present base values and potential gross income.

2. It provides the same percentage changes between productive grades within each class as currently present with the existing valuation schedules.

3. It creates a system of indexing based on the highest production level in each class. This allows for the same impact in valuation change on all grades within each class.

NON-IRRIGATED FARM LAND (SUMMER FALLOW)
(Cropped Every other Year)

Grade	Bushels wheat/acre Midpoint	Potential Gross Income/ Tillable Acre	Adjust. Factor	Per Acre Adjusted Potential Gross Income	Per Acre Present Base Value (Assessed)	Percent Change *
1A8	41	$66.21	1.0000	$66.21	$81.08	-18.3%
1A7	39	62.98	.9662	60.86	74.51	-18.3
1A6	37	59.75	.9286	55.49	67.94	-18.3
1A5	35	56.52	.8867	50.12	61.37	-18.3
1A4	33	53.29	.8398	44.76	54.80	-18.3
1A3	31	50.06	.7928	39.69	48.60	-18.3
1A2	29	46.83	.7462	34.95	42.79	-18.3
1A1	27	43.60	.6988	30.47	37.31	-18.3
1A	25	40.37	.6517	26.31	32.22	-18.3
1B	23	37.14	.6046	22.46	27.50	-18.3
2A	21	33.91	.5574	18.91	23.15	-18.3
2B	19	30.68	.5102	15.66	19.17	-18.3
2C	17	27.45	.4628	12.71	15.56	-18.3
3A	15	24.22	.4150	10.05	12.31	-18.4
3B	13	20.99	.3672	7.71	9.44	-18.3
4A	11	17.76	.3190	5.67	6.94	-18.3
4B	9	14.53	.2702	3.93	4.81	-18.3
5	7	11.30	.2211	2.50	3.06	-18.3

*Differences due to rounding

Derivation of Commodity price used in determining potential gross income for the above schedule:

Conversion Factor

SUMMERFALLOW YIELDS
(Average Bushels/Acre)

Year	Wheat*	Barley
1975	32.13	38.5
1976	31.17	44.5
1977	26.08	32.9
1978	30.22	39.7
1979	22.61	32.5
Average	28.44	37.62

* Average yields for winter and spring wheats
Source: Pg. 30, Montana Agricultural Statistics, Vol. XVIII

Barley yields on summerfallow average 32.28% greater than wheat yields.

COMMODITY PRICES (Per Bushel)

Year	All Wheat	Barley
1977	$2.36	$1.68
1978	2.75	1.70
1979	3.56	2.13
1980	4.14	2.83
1981	3.67	2.20
Average	3.30	2.11

Sources: 1980 and 1981 Annual Crop Summaries and pg. 28-29,
Montana Agricultural Statistics, Vol. XVIII

From 1975 through 1979 85.8 percent of harvested summerfallow acres were in wheat

Gross Income/Bu. Wheat = (.858)(3.30) + 1.3228 (.142)(2.11) = $3.23/bushel

Example: 1A8 @ 41 bu./acre
41 x $3.23 = $132.43/cropped acre ÷ 2 = $66.21/tillable acre

NON-IRRIGATED FARM LAND (CONTINUOUSLY CROPPED)

Grade	Bushels wheat/acre Midpoint	Potential Gross Income/ Tillable Acre	Adjust. Factor	Per Acre Adjusted Potential Gross Income	Per Acre Present Base Value (Assessed)	Percent Change *
1A4	45	$107.32	1.0000	$107.32	$125.71	-14.6%
1A3	43	102.55	.9734	99.83	116.94	-14.6
1A2	41	97.78	.9443	92.34	108.17	-14.6
1A1	39	93.01	.9123	84.86	99.40	-14.6
1A	37	88.24	.8768	77.37	90.63	-14.6
1	35	83.47	.8372	69.89	81.86	-14.6
2	33	78.70	.7928	62.40	73.09	-14.6
3	31	73.93	.7483	55.33	64.81	-14.6
4	29	69.16	.7042	48.71	57.05	-14.6
5	27	64.39	.6596	42.47	49.75	-14.6
6	25	59.62	.6151	36.68	42.96	-14.6
7	23	54.85	.5707	31.31	36.67	-14.6
8	21	50.08	.5262	26.35	30.87	-14.6
9	19	45.31	.4815	21.82	25.56	-14.6
10	17	40.54	.4369	17.71	20.75	-14.6
11	15	35.77	.3916	14.01	16.41	-14.6
12	13	31.00	.3467	10.75	12.59	-14.6
13	11	26.23	.3010	7.90	9.25	-14.6
14	9	21.46	.2549	5.47	6.41	-14.7

*Differences due to rounding

Derivation of Commodity price used in determining potential gross income:

Conversion Factor

Continuously Cropped Yields (Average Bushels/Acre)

Year	Wheat*	Barley
1975	24.78	29.4
1976	24.32	33.8
1977	18.02	28.9
1978	23.61	34.1
1979	17.51	30.0
Average	21.65	31.24

*Average yields for winter and spring wheats

Source: Pg. 30, Montana Agricultural Statistics, Vol. XVIII

Barley yields average 44.3% greater than wheat yields.

COMMODITY PRICES

Year	All Wheat	Barley
1977	$2.36	$1.68
1978	2.75	1.70
1979	3.56	2.13
1980	4.14	2.83
1981	3.67	2.20
Average	3.30	2.11

Sources: 1980 and 1981 Annual Crop Summaries and pg. 28-29, Montana Agricultural Statistics, Vol. XVIII

From 1975 through 1979 an average of 45.14% of harvested continuously cropped acres were in barley.

Gross Income/Bu. Wheat = (.5486)(3.30) + .4514 (1.443)(2.11) = $3.18/bushel

Example: 1A4 @ 45 bu./acre
45 x $3.18 = $143.10/cropped acre x .75[a] = $107.32/tillable acre

[a]Non-irrigated continuously cropped farm land by definition must be in crop production at least 3 out of 4 consecutive years.

GRAZING LAND

Grade	Acres/ Animal Unit Per Year Midpoint	Potential Gross Income Per Acre	Adjust. Factor	Per Acre Adjusted Potential Gross Income	Per Acre Present Base Value (Assessed)	Percen Change
1A2	<3.48 (3.48)	$69.95	1.0000	$69.95	$71.69	-2.4%
1A1	4.80	50.72	.8500	43.11	44.18	-2.4
1A+	6.60	36.88	.8272	30.51	31.27	-2.4
1A	9.60	25.36	.7892	20.01	20.51	-2.4
1B	17.40	13.99	.7343	10.27	10.53	-2.5
2A	24.00	10.14	.6897	7.00	7.17	-2.4
2B	29.40	8.28	.6387	5.29	5.42	-2.4
3	39.00	6.24	.5815	3.63	3.72	-2.4
4	55.80	4.36	.5636	2.46	2.52	-2.4
5	93.00	2.62	.5478	1.43	1.47	-2.7
6	>120.00(156.00)	1.56	.5125	.80	.82	-2.4

*Differences due to rounding

Derivation of Commodity price used in determining potential gross income:

BEEF PRICE INDEX

Year	Cash Receipts* From Cattle & Calves	Marketing* (1000 lbs)	Average Price 1000 lbs	Index Value
1977	$ 412,820,000	1,169,350	$ 353.0337	0.6372
1978	582,260,000	1,051,010	554.0004	1.0000
1979	700,097,000	9,663,380	724.4531	1.3077
1980	640,507,000	1,034,130	619.368	1.1180
1981	506,095,000	933,340	542.241	0.9788

* Source: Pg. 71, Montana Agricultural Statistics, Vol. XVIII
1980 and 1981 Values obtained from Bud Lies, Statistical Reporting Service, Helena.

GROSS RECEIPTS

Year	Custer County Gross Receipts Per Animal Unit	Phillips County Gross Receipts Per Animal Unit	Judith Basin County Gross Receipts Per Animal Unit
1977	$150.95	$135.69	$174.86
1978	236.97	213.03	274.52
1979	309.78	278.48	358.86
1980	264.80	238.04	306.75
*1981	231.87	208.44	268.61

Average Gross Receipts = $243.44/Animal Unit

Example: 1A2 @ 3.48 Acres/AU
$243.44 ÷ 3.48 = $69.95/acre

*Base year 1981. The data for the 3 typical county ranching operations was acquired from detailed studies compiled by the Federal Land Bank. Gross receipts for the years preceding 1981 are determined by using the Beef Price Index cited above.

WILD HAY LAND

Grade	Tons Hay Per Acre Midpoint	Potential Gross Income Per Acre	Adjust. Factor	Per Acre Adjusted Potential Gross Income	Per Acre Present Base Value (Assessed)	Percent Change
1	3.25	$177.45	1.0000	$177.45	$67.60	+162.5%
2	2.75	150.15	.9271	139.20	53.03	+162.5
3	2.25	122.85	.8841	108.61	41.38	+162.5
4	1.75	95.55	.8084	77.24	29.43	+162.5
5	1.25	68.25	.7453	50.87	19.38	+162.5
6	.75	40.95	.6443	26.38	10.05	+162.5
7	.25	13.65	1.0653*	14.54	5.54	+162.5

* Due to a change in midpoint of production

Derivation of Commodity price used in determining potential gross income:

COMMODITY PRICES

Year	(All Hay)
1977	$56.00/Ton
1978	44.00
1979	55.50
1980	62.50
1981	55.00

Average = $54.60/Ton = Gross Income/Ton

Example: Grade 1 @ 3.25 Tons/acre
3.25 x $54.60 = $177.45/acre

Prices are from Montana Agricultural Statistics, Vol. XVIII, p. 33, and "The Annual Summary of Crop Production," 1981. (Both prepared by the Montana Crop and Livestock Reporting Service.)

TILLABLE IRRIGATED FARM LAND

Class I (Maximum Rotation)

Grade	Tons Hay Per acre Midpoint	Potential Gross Income Per Acre	Adjust. Factor	A Per Acre Adjusted Potential Gross Income	B Per Acre Present Avg. Base Value	Per Acre Present Avg. Assessed Value	* ** Perc. Chg.
1A	4.75	$347.94	1.0000	$347.94	$217.67	$87.07	+59.8%
1B	4.25	311.31	.9587	298.46	186.72	74.69	+59.8
2	3.75	274.69	.9029	248.02	155.17	62.07	+59.8
3	3.25	238.06	.8434	200.78	125.60	50.24	+59.9
4	2.75	201.44	.7591	152.91	95.67	38.27	+59.8
5	2.25	164.81	.6105	100.62	62.95	25.18	+59.8
6	1.75	128.19	.4884	62.61	39.17	15.67	+59.8
7	1.25	91.56	.3914	35.84	22.42	8.97	+59.9
8	.75	54.94	.2610	14.34	8.97	3.59	+59.9
Class II (Medium Rotation)							
1A	4.75	$262.72	1.0000	$262.72	$184.82	$73.93	+42.1%
1B	4.25	235.07	.9392	220.78	155.30	62.12	+42.2
2	3.75	207.41	.8761	181.71	127.82	51.13	+42.2
3	3.25	179.76	.8100	145.60	102.42	40.97	+42.2
4	2.75	152.10	.7388	112.37	79.05	31.62	+42.1
5	2.25	124.45	.6597	82.10	57.75	23.10	+42.2
6	1.75	96.79	.5753	55.68	39.17	15.67	+42.1
7	1.25	69.14	.4610	31.87	22.42	8.97	+42.1
8	.75	41.48	.3074	12.75	8.97	3.59	+42.1
Class III (Minimum Rotation)							
1A	4.75	$207.15	1.0000	$207.15	$157.32	$62.93	+31.7%
1B	4.25	185.34	.9567	177.32	134.67	53.87	+31.7
2	3.75	163.54	.9106	148.92	113.10	45.24	+31.7
3	3.25	141.73	.8604	121.95	92.62	37.05	+31.7
4	2.75	119.93	.8039	96.41	73.22	29.29	+31.7
5	2.25	98.12	.7369	72.31	54.92	21.97	+31.7
6	1.75	76.32	.6758	51.58	39.17	15.67	+31.7
7	1.25	54.51	.5415	29.52	22.42	8.97	+31.7
8	.75	32.71	.3611	11.81	8.97	3.59	+31.7

* - Differences due to rounding

** - In the case of irrigated land, the present values (assessed) represent 40% of the base values initially established for the present valuation schedules. In the case of the other classes, the base value established is synonymous with the assessed value shown on the present valuation schedules. Therefore, the % change shown above with irrigated land represents the change in base values. (Column A to Column B)

Derivation of commodity price used in determining potential gross income:

COMMODITY PRICES

Year	Dry Beans	Beets	Corn	(All Hay) Alfalfa	All Wheat	Barley
1981	$20.00/cwt	*	$3.30/bu.	$55.00/ton	$3.67/bu.	$2.20/bu.
1980	25.00	$51.40/ton	3.60	62.50	4.14	2.83
1979	24.00	37.30	2.38	55.50	3.56	2.13
1978	16.50	29.90	2.23	44.00	2.75	1.70
1977	18.80	29.10	2.27	56.00	2.36	1.68
Average	20.86	36.93	2.76	54.60	3.30	2.11

*Not available at this time

Prices are from Montana Agricultural Statistics, Vol. XVIII and "The Annual Summary of Crop Production," 1981. (Both prepared by the Montana Crop and Livestock Reporting Service.)

Class I (Maximum Rotation)

Cropping Sequences:

1. Sugar Beets - Corn - Spring Wheat - 3 years Alfalfa - Barley
2. Beans - Spring Wheat - 3 years Alfalfa - Barley

Source: Howard Bowman, Agronomist Mt. Cooperative Extension Service

Conversion Factor:

1 Ton Alfalfa = 5.714 cwt Beans = 6.753 Tons Beets = 25.436 bu. Corn
=16.202 Bu. Spring Wheat = 21.031 Bu. Barley

Cropping Sequence #1

Gross Income = [(6.753)(36.93) + (25.436)(2.76) + (16.202)(3.30) + (3)(54.60) + (21.031)(2.11)] ÷ 7 = $83.03

Cropping Sequence #2

Gross Income = [(5.714)(20.86) + (16.202)(3.30) + (3)(54.60) + (21.031)(2.11)] ÷ 6 = $63.47

Average Over Both Sequences = $73.25/Ton = Gross Income/Ton

Example: Grade 1A @ 4.75 Tons/Acre
4.75 x $73.25 = $347.94/Acre

Class II (Medium Rotation)

Cropping Sequence:

Corn - Barley - 3 years Alfalfa - Spring Wheat

Gross Income = [(25.436)(2.76) + (21.031)(2.11) + (3)(54.60) + (16.202)(3.30)[÷ 6 = $55.31/Ton

$55.31/Ton = Gross Income/Ton

Example: Grade 1A @ 4.75 Tons/Acre
4.75 x $55.31 = $262.72/Acre

Class III (Minimum Rotation)

Cropping Sequence:

3 years Alfalfa - Barley - Spring Wheat - Summerfallow

Gross Income = [(3)(54.60) + (21.031)(2.11) + (16.202)(3.30) + 0] ÷ 6 = $43.61/Ton

$43.61/Ton = Gross Income/Ton

Example: Grade 1A @ 4.75 Tons/acre
4.75 X $43.61 = $207.15/Acre

The effects of this approach on tax base were analyzed to determine the taxable percentage change necessary to generate the same tax base realized by 30% of the present assessed values. It is found that a reduction to 24.6% would be necessary if the adjusted potential gross income values derived previously were adopted.

Appendix F

Accounts of the June 29-30, 1983 and July 25, 1983 meetings of the Advisory Council given by the Department of Revenue indicate each of the valuation methods was thoroughly discussed. However, while each of the methods was indeed presented to the Advisory Council, relatively little discussion was given to either of the gross income methods before they were rejected.

The indexing method received more discussion than either the potential gross income method or adjusted potential gross income. In fact at one point, the suggestion was made to simply adjust the 1963 values upwards by 20% because "agricultural income has not increased any more than that and, therefore 20% should be equitable." (See: "Overview of the meeting of June 29-30, 1983: Observations by Dave Bohyer", July 1, 1983, p. 5. Legislative Council (HJR 35) files.) This 20% indexing factor had both supporters and detractors on the Advisory Council. The importance of the discussion was not that the 20% factor was rejected, but that the discussion led to a request by the Council to the Department to prepare additional schedules which would preserve the relationships both within and between classes of agricultural lands. Although not stated as such, this indicates at least an interest in if not support of the indexing method.

The Department complied with the request and prepared seven additional options for the Advisory Council's July 25 meeting. Each of the seven options was an attempt to maintain the existing class and production level relationships through indexing.

Four of the options, labeled "OPTION(s) II1, II2, II3, and II4", attempted to index the existing values by a combination of factors. Those factors were "production value" (which was merely a different name for gross income) and an "adjustment factor".

The production value was based on production per acre multipled by commodity price, i.e. potential gross income. The production value was then multiplied by an averaging factor which was calculated in a different way for each of the four options.

Further discussion on these methods may not be very useful because the Advisory Council rejected them after little discussion. Instead, the Council's members concentrated on the first three options, appropriately titled "OPTION(s) I1, I2, I3.

All three options used capitalized net income as the basis for indexing. The methods of indexing varied for each option, with the characteristic of maintaining existing production-to-value relationships common to each of the options.

Option I1 indexed the capitalized net income to the highest production class for each type of land, while Option I3 indexed all intra-class values to the average existing value within a given class.

It may be well to note that the explanation given in this appendix is perhaps more confusing than enlightening as to the rationale for the Advisory Council's recommendation. However, since the recommendation made by the Advisory Council is based on Option I2 the importance of the foregoing discussion is more in the observation that other alternatives were considered than in a complete understanding of each option presented.

In fact, sufficiently little attention was given to several of the alternatives that the Advisory Council members may simply not have chosen to exercise their opportunity to ask questions or more fully discuss the options.

The option not discussed here, Option I2, is addressed in the body of the final report, the reason being that it was the basis for the Advisory Council's September 28, 1983 recommendation.

APPENDIX G

The information contained in this appendix estimates some of the potential effects if Option I2C was implemented. The estimates are based on data found in the "Report of the State Department of Revenue 1980-1982, two Montana Tax Foundation documents, Montana Taxation - 1983, and Montana Property Tax Mill Levies 1982-83, and Option I2C.

Illustration 1.

The total taxable value of Montana property in 1982 was $2,204,492,144. Of that total, agricultural land, i.e. irrigated, non-irrigated, grazing, orchard, and wild hay lands, comprised $140,225,015 or 6.361 percent.

If Option I2C was implemented, the taxable value of the ag lands listed above would be reduced by 59.5 per cent to $56,791,131. The implications of this reduction can be partially illustrated by examining three levies occurring statewide: 25 mill elementary school levy, 15 mill high school levy, and the 6 mill university levy. Below is an illustration of agricultural lands' contributions to those levies.

Levy	1982 Revenues	Revenue under I2C
Elementary (25 mills)	$3,505,625	$1,419,778
High School (15 mills)	2,103,375	851,867
University (6 mills)	841,350	350,747
Total	6,450,350	2,612,392

Illustration 2.

For this illustration, several assumptions must be made because actual data is not available. Therefore, for a purely theoretical taxing district, assume:

1. A district taxable value of $1,000,000;
2. A district levy of 115 mills;
3. That agricultural land comprises 35 percent of the total district taxable value.

Currently, this hypothetical district would receive a total of $115,000 from the 115 mill levy. Of the $115,000, the contribution of agricultural land would be $40,250, ($350,000 x .115).

Under Option I2C, the total taxable value of the district would decrease to $791,750. With a levy of 115 mills, the district would receive $91,051. Of this, agricultural lands would contribute $16,301.

TABLE G1

	Current	Under I2C
District taxable value	$1,000,000	$791,750
Ag lands taxable value	350,000	141,750
Total revenue with 115 mills	115,000	91,051
Ag lands revenue contribution	40,250	16,301

In order to raise the same $115,000 revenue (as before implementation of I2C), the levy would have to be increased to 145.25 mills.

TABLE G2

	$1,000,000 taxable value Levy @ 115 mills	$791,750 taxable value Levy @ 145.2 mills
Total revenue	$115,000	$115,000
Ag lands revenue contrib.	40,250	20,589
Other properties' revenue contribution	74,750	94,411

Under this illustration, the effects of implementing I2C would be felt by the agricultural lands taxpayer and all other property tax taxpayers. Those effects would be a 48% reduction in taxes on agricultural lands per se, and a 26% increase in taxes to all others.

Logically, agricultural lands' owners would receive both the benefit of reduced land taxes and the burden of increased taxes on their remaining property, including machinery and equipment. How those impacts would be felt by the individual would be wholly dependent upon the amount of agricultural land owned, compared to the amount of other property.

APPENDIX H

MONTANA LAND VALUE INCREASE SLOWED

Montana agricultural land values increased an average of only 3 percent during the period February 1, 1980 to February 1, 1981. This compares to 17 percent a year ago, and is the smallest year to year increase since 1969.

Irrigated farmland with improvements was valued at $1,155 per acre this February compared with $1,035 a year earlier. Dry cropland with improvements was valued at $375--up 10 percent from $340 February 1, 1980. Non irrigated grazing land was reported at $175 per acre--down $5 from a year earlier.

Land value data are based upon reports from nearly 300 farmers and ranchers who reported value of agricultural land in their localities.

The values exclude land where value is affected by use or offer for non-agricultural purposes.

MONTANA LAND VALUES PER ACRE, BY KIND 1/

	Feb. 1, 1979	Feb. 1, 1980	Feb. 1, 1981
Irrigated Farmland	$875	$1,035	$1,155
Dry Cropland	305	340	375
Non Irrigated Grazing Land	150	180	175

1/ Including improvements.

Source: Montana Crop and Livestock Reporter, May 15, 1981.

Using Department of Revenue data, agricultural improvements typically approximate 41.5% of the value of agricultural lands; this is a statewide average. Applying that percentage, the values of the above lands could be estimated by multiplying each value by .585. Of course this is only a very rough way to estimate land values, and an individual operation would likely be significantly different.

_____ BILL NO. _____

INTRODUCED BY _____

BY REQUEST OF THE REVENUE OVERSIGHT COMMITTEE

A BILL FOR AN ACT ENTITLED: "AN ACT PROVIDING FOR ESTABLISHMENT OF AGRICULTURAL LAND VALUES FOR THE REVALUATION CYCLE BEGINNING JANUARY 1, 1986; AMENDING SECTION 15-7-201, MCA; AND PROVIDING A DELAYED EFFECTIVE DATE."

WHEREAS, House Bill 851 (Ch. 510, L. 1983) enacted by the 48th Legislature recognized the difficult economic circumstances of farmers and ranchers by placing a temporary moratorium on the effective date of any Department of Revenue rules revising agricultural land valuations; and

WHEREAS, House Bill 637 (Ch. 644, L. 1983) enacted by the 48th Legislature expanded upon the intent of the Legislature regarding the valuation of agricultural land; and

WHEREAS, House Joint Resolution 35 was adopted in the 1983 Legislative Session, calling for a study of agricultural land taxation; and

WHEREAS, the legislative interim Joint Subcommittee on Agricultural Land Taxation has studied taxes on agricultural land; and

WHEREAS, the Joint Subcommittee on Agricultural Land Taxation found that the productive value of agricultural lands actually decreased since the last revaluation of agricultural land; and

WHEREAS, the Joint Subcommittee on Agricultural Land Taxation, with a policy of fairness and fiscal responsibility, recommended that assessed valuations currently in effect for agricultural land, except irrigated land, be continued for the revaluation cycle beginning January 1, 1986; and

WHEREAS, it is the intent of the Legislature to implement the recommendation of the Joint Subcommittee on Agricultural Land Taxation.

THEREFORE, it is the purpose of this bill to reflect that recommendation by amending section 15-7-201, MCA, and clarifying the legislative intent with respect to the valuation of agricultural lands.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF MONTANA:

Section 1. Section 15-7-201, MCA, is amended to read:

"15-7-201. (Effective January 1, 1986) Legislative intent -- value of agricultural property. (1) Since the market value of many agricultural properties is based upon speculative purchases which do not reflect the productive capability of agricultural land, it is the legislative

intent that bona fide agricultural properties shall be classified and assessed at a value that is exclusive of values attributed to urban influences or speculative purposes.

(2) Agricultural land shall be classified according to its use, which classifications shall include but not be limited to irrigated use, nonirrigated use, and grazing use.

~~(3)~~ Within each class of agricultural land, such land shall be assessed at a value that is fairly based on its ability to produce~~,---taking---into---consideration---the classification--system--in--existence--on--January--1,-1986, provided,-however,-the-department-may--consolidate--tillable irrigated--land--classes.--With--relation-to-irrigated-land, water-costs-shall-be-taken-into-consideration,-except-at--no time--may--the--resulting-value-of-irrigated-land-be-reduced below-the--value--such--land--would--have--if--it--were--not irrigated~~.

~~(4)~~(3) Capital costs such as improved water distribution, fertilizer, and land shaping that increase productivity shall not be used in determining assessed values.

(4) (a) Except as provided in subsections (4)(b) and (4)(c), the department shall continue to use the agricultural land valuation schedules in effect on January 12, 1984, for the revaluation cycle beginning January 1,

1986.

(b) Irrigated land values shall be revised taking water costs into consideration. However, at no time may the value of irrigated land be below the value such land would have if it were not irrigated.

(c) The provisions of subsection (4)(a) do not apply to agricultural land used for growing timber."

NEW SECTION. Section 2. Effective date. This act is effective January 1, 1986.

-End-

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